CR-1999-209507

Report 11426
March 1999

GenCorp
Aerojet

Integrated Advanced Microwave Sounding Unit-A (AMSU-A)

Performance Verification Report

Final Comprehensive Performance Test Report

P/N 1331200-2, S/N 105/A2

Contract No. NAS 5-32314
CDRL 208

Submitted to:

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

Submitted by:

Aerojet
1100 West Hollyvale Street
Azusa, California 91702

Aerojet

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FINAL CPT

AE-26156/4C

SO# 584763, OPER. 0490

S/N 105/A2

P/N 1331200-2

GENCORP AEROJET

PO Box 296
Azusa, CA 91702
CAGE Code 70143

ENGINEERING CHANGE NOTICE

ADVANCE REL. INCORPORATE SHEET 1 OF 164

1. PROGRAM	2. ECN NUMBER	3. CONTRACT NUMBER	4. PREPARED BY / DATE / EXT	5. DOCUMENT NUMBER	6. NEW REV.
COMBINED AMSU	CAMSU- 1980	NAS 5-32314	TOM HIGGINS 10/30/98 X2965	AE 26156/4C	D

7. CHANGE CLASS	8. MULTIPLE DOCUMENTS AFFECTED	9. CHG TYPE	10. HARDWARE PART NUMBER(S)	CURR REV MAND	CURR REV LTST	NEW REV MAND	NEW REV LTST	EFFECTIVITY	DATE	11. DOCUMENT TITLE
IA IB II (IB circled); CCR #	YES NO (NO circled)	DOC CHG (circled) / HARDWARE / SOFTWARE	NA					☐ END ITEM S/N ☐ PART SERIAL/LOT		METSAT/KLM/AMSU-A2 SYSTEM COMPREHENSIVE & Limited PERFORMANC TESTS TEST PROCEDURE

12. DESCRIPTION OF CHANGE
ITEM ZONE

SEE ATTACHED REDLINES

SO#335166

RED LINE MARK-UP

CAMSU 2087

AMSU B SEIT

3-3-99

Prepare as appvd DRD - Requires Customer apprvl

___ Urgent ✓ Routine

13. SIGNATURES		DATE
Design Verif., Dwg.	NA	
Qual Eng	[signature]	12/22/98
PTL (Eng)	[signature]	12/21/98
Mfg Eng	D. Willis	1/4/99
Systems	D.R. [signature]	12/21/98
NASA T.O.	See Attached	
Des. Assur.	N/A	
Matls.	N/A	
Design Verif., Specs.	[initials]	1/5/99

14. JUSTIFICATION / REASON FOR CHANGE
Modify the test procedure to reflect test methodology improvements and provide a more logical testing sequence.

16. REMARKS/SPECIAL INSTRUCTIONS/TECHNICAL EVALUATION
No technical impact

15. DISPOSITION OF MATERIAL	USE AS IS	MODIFY	SCRAP	RETURN TO STORES
ON ORDER		NA		
IN STOCK				
INSTALLED				

20. CONFIGURATION MGR. [initials]

21. DIST. CODE:

22. REL. DATE

17. NASA CONCURRENCE OF CLASSIFICATIONS [signature] DATE: 1/7/98

18. CHANGE CODE A|0|1

19. PCCB CHAIRMAN / PMO: APPROVE (circled) DISAPPROVE DEFER [signature] DATE: 1/14/99

23. INCORPORATION DATE
Inc. By ....
Design Verif. ....

98/06/11

AEROJET

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Azusa, CA 91702
CAGE Code 70143

ENGINEERING CHANGE NOTICE

ADVANCE REL. INCORPORATE SHEET 1 OF 64

1. PROGRAM	2. ECN NUMBER	3. CONTRACT NUMBER	4. PREPARED BY / DATE / EXT	6. DOCUMENT NUMBER	8. NEW REV.
COMBINED AMSU	CAMSU-1980	NAS 5-32314	TOM HIGGINS 10/30/98 X2965	AE 26156/4C	D

7. CHANGE CLASS	8. MULTIPLE DOCUMENTS AFFECTED	9. CHG TYPE	10. HARDWARE	EFFECTIVITY	11. DOCUMENT TITLE
IA IB II CCR#	YES NO	DOC CHG HARDWARE SOFTWARE	PART NUMBER(S) / CURR REV (MAND, LTST) / NEW REV (MAND, LTST)	☐ END ITEM S/N ☐ PART SERIAL/LOT DATE	METSAT/KLM/AMSU-A2 SYSTEM COMPREHENSIVE & Limited PERFORMANC TESTS TEST PROCEDURE

12. DESCRIPTION OF CHANGE
ITEM ZONE

SEE ATTACHED REDLINES

SOH335166

___ Urgent ✓ Routine

13. SIGNATURES		DATE
Design Verif., Dwg.	N/A	
Qual Eng	[signature]	12/22/98
PTL (Eng)	[signature]	12/21/98
Mfg Eng	[signature]	1/4/99
Systems	[signature]	12/21/98
NASA T.O.	[signature]	1/14/98
Des. Assur.	N/A	
Matls.	N/A	
Design Verif., Specs.		

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ON ORDER				
IN STOCK				
INSTALLED				

20. CONFIGURATION MGR.

21. DIST. CODE: 22. REL. DATE

17. NASA CONCURRENCE OF CLASSIFICATIONS [signature] DATE 1/7/99

18. CHANGE CODE

19. PCCB CHAIRMAN / PMO: APPROVE DISAPPROVE DEFER [signature] DATE 1/14/99

23. INCORPORATION DATE
Inc. By ....
Design Verif. ....

Electronic Systems Plant
P.O. Box 296
Azusa, California 91702-0296
CAGE/Facility Ident: 70143

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ECN NO. 1980

GENCORP
AEROJET

AE-26156/4C
17 Sep 1998

Superseding AE-26156/4B
23 Jun 98

PROCESS SPECIFICATION

METSAT/KLM/AMSU-A2, SYSTEM COMPREHENSIVE AND LIMITED PERFORMANCE TESTS TEST PROCEDURE

REDLINE MASTER COPY

S/O: 335166 OPER:

TEST ENGINEER:

P/N: 1331200-2-TST
S/O: 584763
S/N: 005
OPER. 0490

Contract No.: NAS5-32314

QUALITY ENGINEER:

DATE: 10/30/98

ECN: 1980

Prepared for:

NASA/Goddard Space Flight Center
Greenbelt Road
Greenbelt, MD 20771

RED LINE MARK UP

ECN CAMSU 2087 AMSU 8 SEIT 3-3-99

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Ĥ 1/23/ QC 223

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FIGURES

TABLES

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TEST DATA SHEETS

TEST DATA SHEETS (CONT)

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1. SCOPE

1.1 ***Scope.*** This specification establishes the requirements for the Comprehensive Performance Test (CPT) and Limi Performance Test (LPT) of the Advanced Microwave Sounding Unit-A2 (AMSU-A2), referred to herein as the unit. The u is defined on Drawing 1331200.

1.2 ***Test procedure sequence.*** The sequence in which the several phases of this test procedure shall take place is show Figure 1, but the sequence can be in any order.

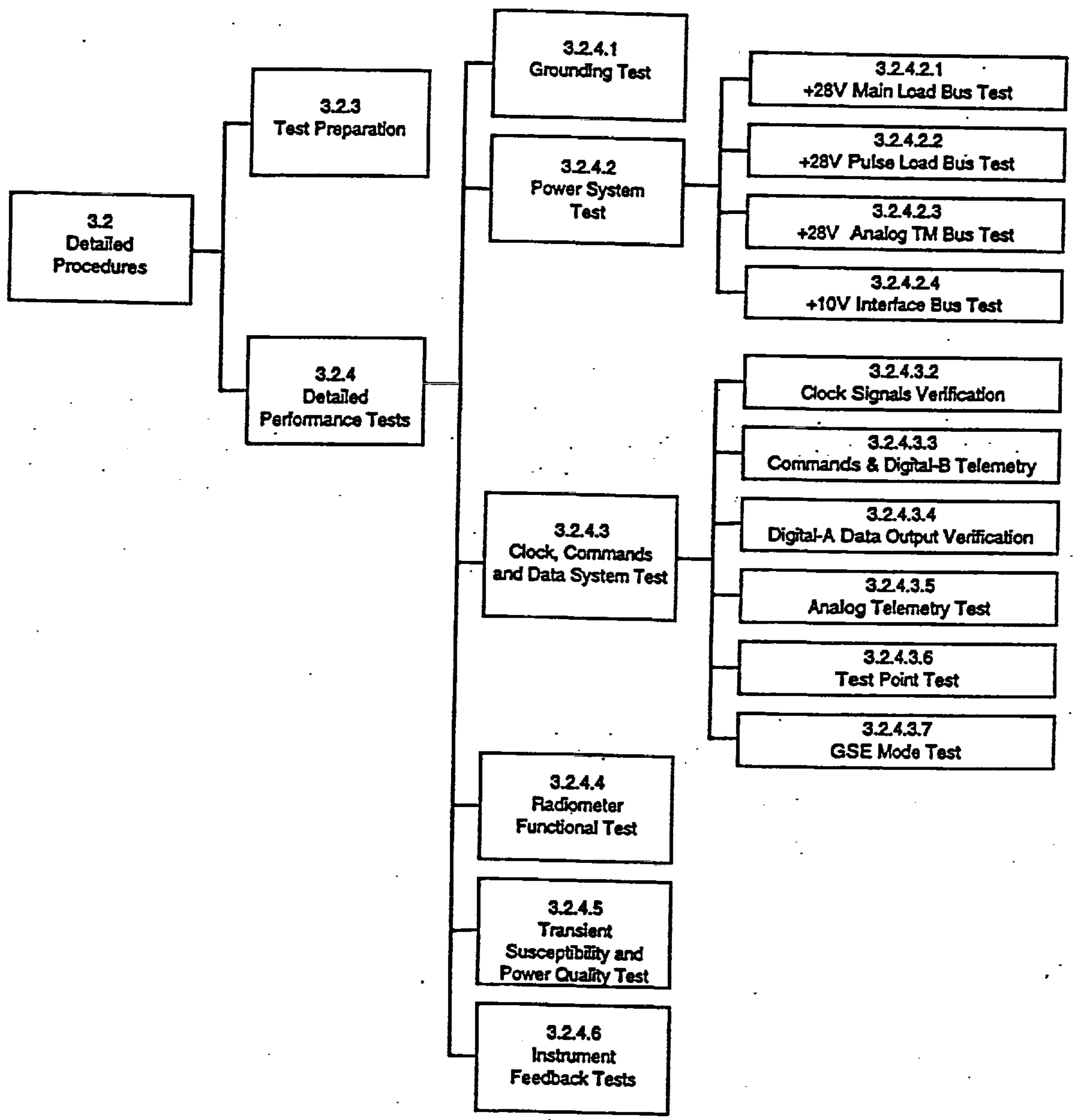

Figure 1. Test Procedure Sequence

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2. APPLICABLE DOCUMENTS

2.1 *Government documents.* The following documents form a part of this specification to the extent specified. Unles otherwise specified, the issue shown shall apply.

STANDARDS

Military

MIL-STD-45662	Calibration Systems Requirements

OTHER DOCUMENTS

S-480-79	Performance Assurance Requirements for the EOS/METSAT Integrated Programs Advanced Microwave Sounding Unit-A (AMSU-A) (PAR)
S-480-80	Performance and Operation Specification for the EOS/METSAT Integrated Programs Advanced Microwave Sounding Unit-A (AMSU-A) (POS)
GIIS-3267415	ATN-KLM General Instrument Interface Specification
UIIS-2624483	AMSU-A2 Unique Instrument Interface Specification

(Copies of government documents should be obtained as indicated in the Department of Defense Index of Specification an Standards.)

2.2 *Non-Government documents.* The following documents form a part of this specification to the extent specified herei Unless otherwise specified, the issue in effect on the date of testing shall apply.

2.2.1 *Aerojet documents*

SPECIFICATION

AE-26002/2	Test Procedure, Subsystem, Antenna Drive for AMSU-A2
AE-26157	Special Test Equipment (STE), Operation and Maintenance Manual
AE-26357	Transportation Handling Procedure for the AMSU-A System Integrated Program

STANDARD

STD-2454	Requirements for Electrostatic Discharge Control

REPORT

10353	Contamination Control Plan for the Advanced Microwave Sounding Unit-A (AMSU-A)

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DRAWINGS

1331200	Advanced Microwave Sounding Unit A2 (AMSU-A2)
1335695	Special Test Equipment
1356655	Console Assembly, METSAT and EOS STE

(Copies of Aerojet documents may be obtained from GenCorp Aerojet, CAGE 70143, P.O. Box 296, Azusa, California, 91702-0296).

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3. REQUIREMENTS

3.1 *General test requirements*

3.1.1 *Equipment and test facilities.* The tests described herein shall be performed at Aerojet under laboratory conditions in an EMI shielded chamber for the first and final CPT. Other tests need not be accomplished in the EMI shielded chamber. The test equipment listed in Table I shall be used when performing the tests. If the specified equipment is not available, the equipment substituted shall provide a measurement accuracy equal to or greater than that of the specified equipment. The AMSU-A Special Test Equipment (STE) shall be used for activation and control of the unit and monitoring of its performance.

3.1.2 *Required procedures and operations.* The unit shall be subjected to the examinations and tests specified in 3.2.4 and Table II.

Table I. Equipment List

Item	Quantity	Item Description	Mfg.	Model
01	1	Dynamic signal analyzer	Hewlett-Packard	3562A
02	1	Signal Generator	Hewlett-Packard	3314A
03	1	Oscilloscope	Tektronix	2225A
04	1	9-pin breakout box	Aerojet	2536-3743/SK1358702-1
05	1	15-pin breakout box	Aerojet	2536-3744/SK1358703-1
06	2	25-pin breakout box	Aerojet	2336-3746/SK1358704-1
07	1	37-pin breakout box	Aerojet	2536-3745/SK1358705-1
08	1	Lab. general purpose power supply	Hewlett-Packard	6114
09	1	LN_2 container	Cole	N03726-20
10	1	Spectrum analyzer	Hewlett-Packard	~~8566B~~ 8590L
11	1	STE computer	Aerojet	1336695/SK1356655
12	1	STE interface cable J1	Aerojet	1335758-1
13	1	STE interface cable J2	Aerojet	1335752-1
14	1	STE interface cable J3	Aerojet	1335756-1
15	1	STE interface cable J4	Aerojet	1335755-1
16	1	STE interface cable J5	Aerojet	1335753-1
17	1	STE interface cable J6	Aerojet	1335754-1
18	1	STE interface cable J7	Aerojet	1335757-1
19	1	Current probe amp	Hewlett-Packard	AM503
20	1	Universal counter	Hewlett-Packard	5316A
21	1	Oscilloscope camera	N/A	N/A
22	1	Power supply	Power Designs	3650-S
23	1	Multimeter	Fluke	77
24	1	Plotter	Hewlett-Packard	7475A
25	1	SIGNAL GENERATOR	Hewlett Packard	83620B
26	1	MM-WAVE Source Module	"	83557A
27	1	COUPLE/Detector	"	83557-60001
28	1	SPECTRUM Analyzer	"	8563E

* For limited performance test only: item numbers 04, 06, 09, 11 through 18, and 23 are required.

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Table II. AMSU-A2 Performance Tests

Paragraph	Test Description	1st CPT	LPT	Sub CPT	Final CPT
3.2.4.1	Grounding Test	X	X	X	X
3.2.4.2.1.1	+28 Main Load Bus (MLB) Turn On Transient	X			X
3.2.4.2.1.2	+28 MLB Operating Power	X	Note 1	Note 2	X
3.2.4.2.2	+28 Pulse Load Bus (PLB) Test	X		Note 3	X
3.2.4.2.3	+28 Analog Telemetry Bus (ATB) Test	X		X	X
3.2.4.2.4	+10 V Interface Bus Test	X		X	X
3.2.4.3.2	Clock Signals Test	X			X
3.2.4.3.3	Commands and Digital-B Telemetry Test	X	X	X	X
3.2.4.3.4	Digital-A Data Output Test	X	Note 4	Note 4	X
3.2.4.3.5	Analog Telemetry Test	X	Note 5	Note 5	X
3.2.4.3.6	Test Point Test	X		X	X
3.2.4.3.7	GSE Mode Test	X Note 6			
3.2.4.4	Radiometer Functional Test	X	X	X	X
3.2.4.5	Transient Susceptibility and Power Quality Tests	X			
3.2.4.6	Instrument Feedback Tests	X			

Notes:
1. 3.2.4.2.5 (Power input test for LPT).
2. At 28V only.
3. 3.2.4.2.2 except 3.2.4.2.2.5.
4. Only full scan.
5. STE only (3.2.4.3.5.2).
6. GSE mode test/verification is not required and is for engineering use only.

3.1.2.1 *Limited performance test (LPT).* The Limited Performance Test shall consist of the test procedures specified in the LPT column of Table II.

3.1.2.2 *Comprehensive performance test (CPT).* Three versions of the Comprehensive Performance Test are identified in Table II. These are applicable for different test stages. The test procedures to be performed for each version are specified in the 1st CPT, Sub CPT, and Final CPT columns of Table II.

3.1.3 *Inspection instructions.* The following shall apply to all inspections performed under this specification.

a. Personnel familiarization: All personnel directly concerned with the conduct of the inspection shall become familiar with the entire content of this document before beginning the tests. Each step, including all notes, warnings, and cautions, shall be understood thoroughly before starting.

b. Referenced documents: Performance of the tests specified herein may require reference to the documents listed in Section 2. It is recommended that the applicable issues of these documents be available at the time and place of testing.

3.1.4 *Test conditions.* The following paragraphs shall apply to all testing described in this document.

3.1.4.1 *Standard ambient conditions.* Unless otherwise specified in a detailed method paragraph, all handling shall be

performed under the following laboratory ambient conditions.

a. Handling in accordance with AE-26357

b. Contamination control in accordance with Report 10353

c. Temperature: +23 ± 10°C

d. Pressure: 610 to 810 torr

e. Humidity: 50 ± 20% (no condensation)

f. The instrument shall be placed in its protective bag (1338427) when not in use.

3.1.4.2 *Test tolerances*. The tolerances allowed on test conditions are intended only to provide for accuracy of such items instrumentation and controls. Conditions shall be as close as possible to the nominal or center values specified, and in instance shall they exceed the tolerances specified. Unless otherwise specified, the tolerances shall be within ± 10%.

3.1.4.3 *Read-out accuracy*. Parameters are specified either as limits or as nominal values with plus-or-minus toleranc These limits and tolerances shall be regarded as absolute, and the inaccuracies of measuring equipment shall not interpreted as part of measured values in such a way that out-of-limit measurements may appear in-limit.

3.2 *Detailed procedures*

3.2.1 *Responsibility for inspection*. All tests specified herein shall be performed under the cognizance of Aerojet Qual Assurance.

3.2.2 *Monitoring procedures for equipment*. Test equipment calibration schedules and procedures shall comply with t requirements of MIL-STD-45662. Before performing examinations and tests in accordance with this procedure, all t equipment to be used shall be verified as being within their current calibration periods. Calibration or alignment, necess for operation of the equipment within the requirements of this document, shall be performed when required.

3.2.3 *Test preparation*. Perform the following preparations.

3.2.3.1 *STE connection*. The power sources, signal sources, and loads are provided to the unit under test by the AMSU Special Test Equipment (STE) (Drawing 1335695 or 1356655), in accordance with paragraph 5.2 of S-480-80. The STE automated test equipment controlled by a MicroVax computer. The unit shall be connected to the STE in accordance w AE-26157 and the detailed test procedures in 3.2.4.

3.2.3.2 *Signal sources*. Signal sources required during the performance test but not provided by the STE are as follows:

a. Cold background at LN_2 temperature at room ambient.

b. +28 Vdc ± 1 Vdc, 3 Amps.

3.2.3.3 *Signal outputs*. Signal outputs, except for the test signals at J7, shall be monitored by the STE. The signal outp at J7 are shown in Figure 2.

3.2.3.4 *Test software*. AMSU-A2 bonded software shall be used to operate the STE. During initialization of the STE, as specified in AE-26157, the A2 software shall be selected. The bonded software is being selected by the STE computer automatically during initialization of the STE.

3.2.3.5 *Initial turn-on*. When called for in the individual test procedures, turn on the unit as follows:

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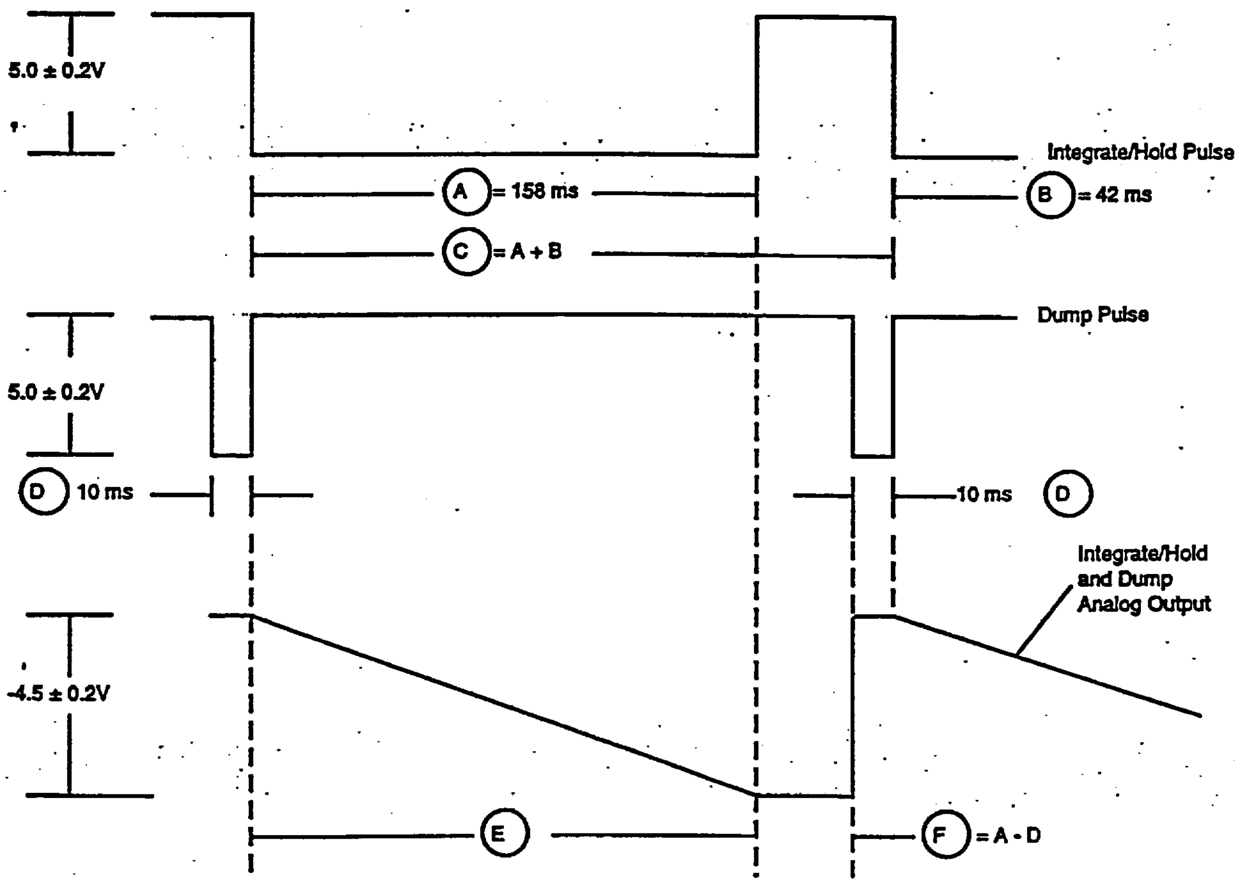

NOTE: Timing Tolerances are ±10%.

Figure 2. Signal Output at J7

1. Turn on power to STE, initialize STE (per AE-26157 instructions), and turn on AMSU-A2 STE power switches. Adjust +28 V power supply by using DVM to +28.0 V ± 0.5V at STE J1 connector pin No. 1 (+) and pin No. 3 (RTN). Use breakout box at J1 to connect the DVM.

2. Enter the serial number (decimal equivalent of the identification number provided in the UIIS) for the unit under test using AE-26157, if necessary. Verify that the Main Menu is displayed on the STE CRT terminal display. Turn off the AMSU-A2 STE power switches.

3. Connect J1 through J7 to AMSU-A2 unit.

4. Verify that the PWR and SW/TM switches on the STE power distribution unit are ON.

5. On the Main Menu, press the [2] MONITOR ONLY (type the number). The Monitor Only Menu will be displayed, with Block Monitor Data Select options shown in the middle (window) area of the screen.

6. On the Monitor Only Menu, press [14] COMMANDS. The Commands Menu will be displayed in the window area.

7. On the Commands Menu, press [9] MODULE POWER. Wait at least 18 seconds for command executio This applies power to the unit.

8. Execute commands as necessary to obtain the following configuration:

[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10]	SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12]	SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13]	COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14]	ANTENNA WARM CAL POS =	NO			
POWER [4] ON					

9. Wait at least 18 seconds and observe the commands are acknowledged by STE.

10. Verify that the STE power supply is adjusted to its normal +28.0 Vdc ±0.5 Vdc operating voltage by using DVM across J1-1 and J1-3. Use 25-pin breakout box at J1 to connect the DVM.

11. Verify that all breakout box switches are in the closed position.

12. After initial turn-on, execute commands and connect the unit as necessary according to the individual te procedures.

3.2.3.6 *Turn-off methods*. The unit can be turned off immediately by pressing [9] MODULE POWER = DISCONNECT c the Commands Menu. For a phased shutdown, press [11] MODULE TOTALLY OFF = OFF on the Command Menu or pre POWER [4] OFF on any display. When connecting breakout boxes to the unit or STE connectors, verify that the unit pow is off and the STE +28V power supply is manually turned off.

3.2.4 *Detailed performance tests*. The comprehensive performance tests for the AMSU-A2 system are to be carried out c the fully assembled and operational unit. The tests to be performed are as follows:

a. Grounding system test.

b. Power system test.

c. Clock, commands and data system test.

d. Radiometer functional test.

e. Transient susceptibility and power quality test.

f. Instrument feedback tests.

3.2.4.1 *Grounding test*. This test provides the verification of the unit grounding requirements of GIIS-3267415 Paragra 3.1.1 and UIIS-2624483 paragraph 3.11.

1. Connect breakout boxes to each of the spacecraft interface connectors J1 through J7 as shown in Figure Verify that all connectors are protected with connector savers. Verify STE is not connected to instrument

2. Measure and record continuity or isolation between the points shown on Test Data Sheet (TDS) (Appendix B, TDS B-1 for LPT).

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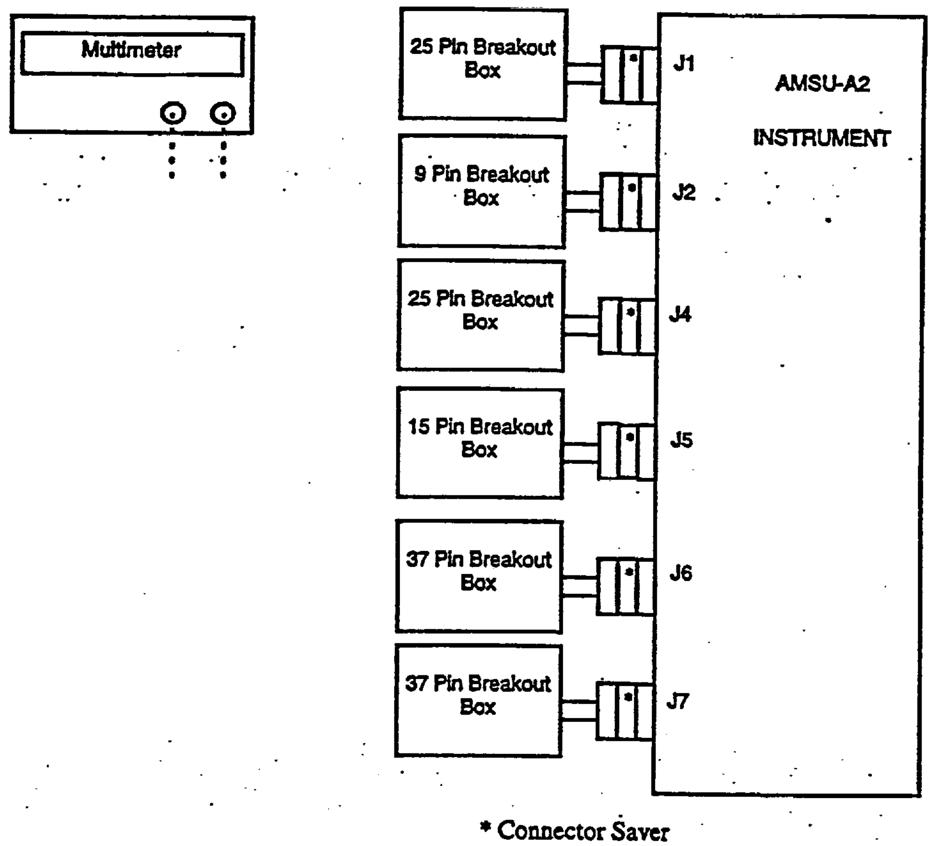

Figure 3. Grounding Test Setup

3.2.4.2 **Power System, Transient Susceptibility, Power Quality, and Instrument Feedback Tests**

The purpose of these tests are to verify power system compliance in regard to:

a. Turn On Transients
b. Operating Power
c. Transient Susceptibility
d. Current Ripple

The following DC voltage lines will be tested for the above parameters:

a. 28V Main Load Bus (parameters a, b, c, d)
b. 28V Pulse Load Bus (parameters a, b, c, d)
c. 28V Analog Telemetry Bus (parameters b, c, d)
d. 10V Interface Bus (parameters b, d)

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3.2.4.2.1.1 ***+28V MLB during turn on transient.*** The +28V MLB turn on transient shall be verified as follows:

1. Configure the unit and test equipment as shown in Figure 4. Verify that switches 1, 2, 14 and 15 of the breakout box are in the OPEN position. Disconnect +28 Vdc external power supply output and adjust the power supply to read 28.56 Vdc ± 0.05 Vdc on voltmeter No. 1. Connect the power supply output as shown in Figure 4.

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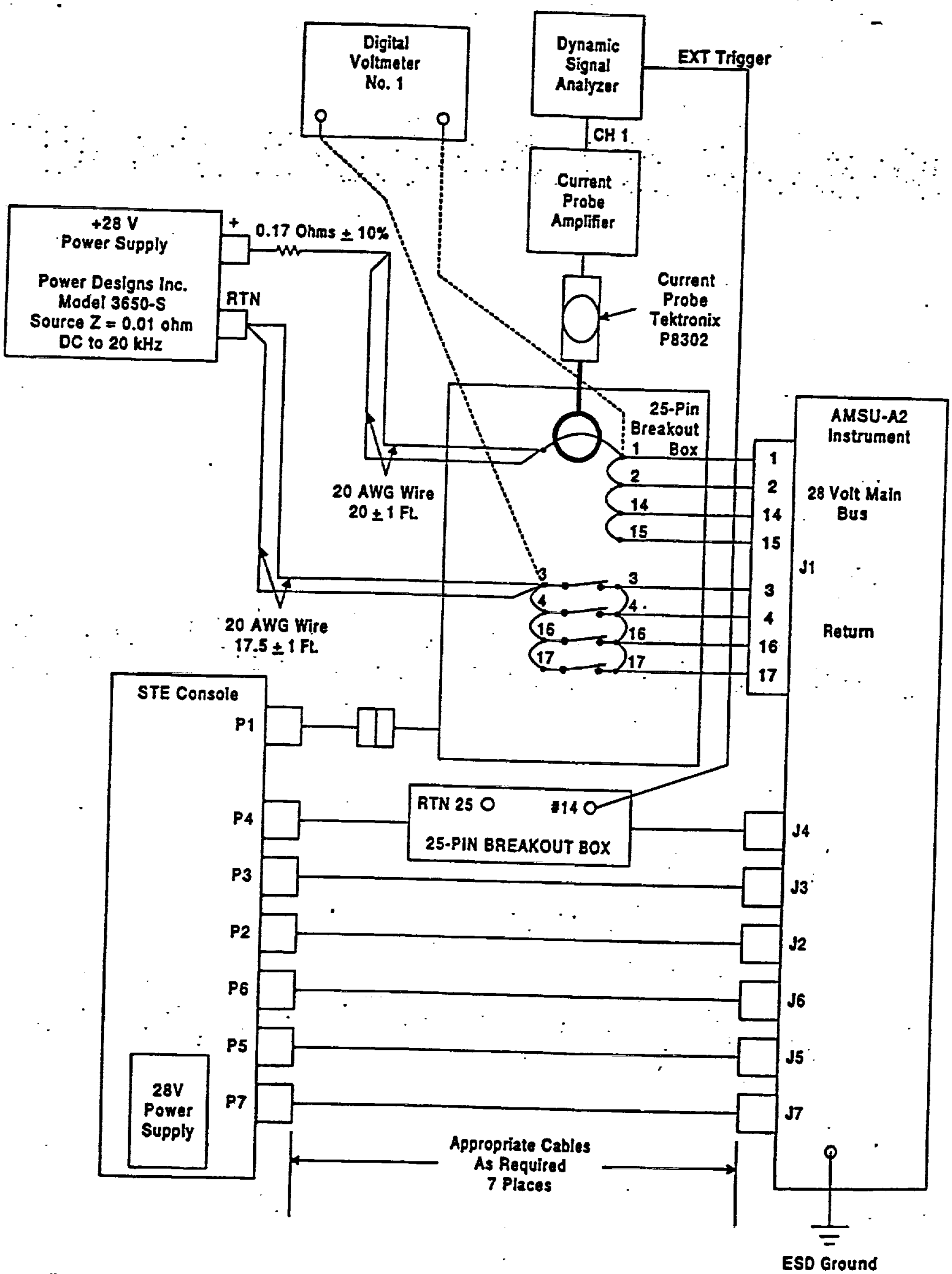

Figure 4. +28V Main Load Bus Verification Setup

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See pages 12A & B

2. Configure the dynamic signal analyzer as follows:

(a) Time capture mode

(b) External trigger

(c) Trigger level = 1V

(d) Slope = –

(e) Time span: zero to 0.2 seconds

(f) Scale: (select at test)

(g) Freq.: 100kHz

3. Turn the unit ON as described in 3.2.3.5. If necessary, reset/verify the external 28 Vdc power supply to read 28.56 Vdc ±0.05 Vdc on voltmeter No. 1.

NOTE

Do not proceed without successful completion of step 3.

4. Turn the unit OFF by executing command [9] MODULE POWER. Confirm the command has been executed on STE display.

5. Turn the unit ON for a second time by executing command [9] MODULE POWER. Confirm the waveform has been captured by the Dynamic Analyzer.

6. Obtain a hard copy from the dynamic analyzer. Expand the scale to obtain the dI/dT, if necessary, and obtain a hard copy of the expanded waveform.

NOTE

This test requires complex set up of the dynamic analyzer. The test can be repeated to obtain a proper waveform.

7. From the hard copies obtained in step 6, determine the peak current amplitude, pulse width, and rate of change described in Figures 5 and 6. Record the values on TDS 2 and attach hard copy to data sheet.

8. Reset the dynamic analyzer.

9. While monitoring voltmeter No. 1, adjust the external power supply to read +27.44 ±0.05 Vdc (see Figure 4) at J1 and repeat steps 2 through 8.

10. Repeat step 9 for +28.00 ±0.05 Vdc. (Perform instrument feedback test of 3.2.4.6.3.2, if required.)

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3.2.4.2.1.2 *+28V MLB operating power*. Measure the steady state current, voltage, and power as follows:

1. Turn off the unit.

2. Insert current meter in positive lead of external power supply.

3. Turn the unit on as indicated in 3.2.3.5.

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2. Configure the Dynamic Signal Analyzer (DSA) as follows:

Select **MEAS MODE**
- Select *Time Capture*
- Select *Capture Select*
- Select *Capture Length*; Enter ~~500.0~~ 300.0; Select *msec*

Select **FREQ**
- Select E SMPL ~~*Off*~~ Freq Span
- Select ~~*Time Length*; Enter 80.0~~ 25; Select ~~*msec*~~ KHz

Select **SELECT MEAS**
- Select *Power Spec*
- Select *CH1 Active*

Select **WINDOW**
- Select *Hann*

Select **SOURCE**
- Select Source *Off*

Select **AVG**
- Select Avg *Off*
- Select Tim Av *Off*

Select **RANGE**
- Select *Chan 1 Range*; Enter 1; Select *V*

Select **INPUT COUPLE**
- Select CH1 *DC*
- Select CH 1*Ground*

Select **INPUT TRIG**
- Select *Trig Level*; Enter 100; Select *mv*
- Select Arm *AU*
- Select *Ext*; Select (-) *Slope*

Select **TRIG DELAY**
- Enter 0; Select *uSec*

Select **COORD**
- Select *Real*

Select **VIEW INPUT**
- Select *Time Buff*

Select **SCALE**
- Select *X Fixd Scale*; Enter 0.0,~~80~~ 300; Select *msec*
- Select *Y Fixd Scale*; Enter 0,~~1~~ 80; Select ~~*V*~~ mV

Select **UNITS**
- Select *Hz (sec)*

- NOTE -

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

a) Select ~~200ma~~ 1.0 A/ 10mv per div. on the current amplifier.
b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
c) Adjust the "y" axis voltage range to ± 4mv
d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
f) Position the current probe to it's original location in accordance with Figure 4, and return the DSA to "Ext" trigger.

3. ~~Adjust external power supply for +28vdc~~. Turn the unit ON by selecting [9] MODULE POWER, setup the operating modes as defined in paragraph 3.2.3.5. (reference the command screen parameters below). If necessary, re-adjust the external power supply for 28vdc.

[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10]	SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12]	SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13]	COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14]	ANTENNA WARM CAL POS =	NO			
POWER [4] ON					

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4. Turn the unit OFF by executing command [9] MODULE POWER. Confirm the command has been executed on the STE display.
5. Start the DSA signal capture by depressing "Start Capture"; wait for the DSA message "waiting for trigger" before proceeding.
6. On the STE computer, select [9] MODULE POWER and obtain a record of the +28 MBL Turn on current waveform. On the STE computer, select [9] MODULE POWER to turn the instrument's power OFF. Adjust the display time base and voltage sensitivity to allow for adequate current and pulse duration measurements (refer to Figure 5 for an example of per division values). Plot the obtained waveform and attach a hard copy of the scan to TDS 2. (time to reach steady state current;)
7. Measure the Turn On ~~pulse width~~; record this value in TDS 2.
8. Compute the peak current as follows:

   Multiply the maximum Y value by the current/ div as selected on the current amplifier. As an example: if the current amplifier is set up to display ~~200 ma~~/ 10 mv per division, and the maximum Y value = ~~276~~mv: 46.88 mv 1.0A

   46.8 1.0A 46.8
   ~~276~~mv x (~~200~~ma/ 10mv) = ~~5520ma~~ = ~~5.52~~ amps

   Record this value on TDS 2

9. The 1st derivative of the current waveform must be calculated. Compute the dI/ dT as follows:

   The most probable location of the greatest current demand is during the first positive transition after voltage application. If this is the case, expand that segment of the display and measure the greatest voltage transition in the smallest time transition. The change in voltage times the current/ div as selected on the current amplifier produces the change in current. Next divide this change in current by the change in time (in microseconds). This value is dI/ dT. Example:

   Change in voltage.. 35.29 ~~144~~ mv
   Change in time (microseconds).......... 31.25 ~~19.5~~ us
   Current/ div on current amp .... 1000 ~~200~~ma/ 10mv

   35.29 1000 31.25 112.9
   ~~144~~mv x (~~200~~ma/ 10mv)/ ~~19.5~~us = ~~147.7~~ma per us

10. Record the computed value on TDS 2.
11. With the multimeter, adjust the external power supply to 27.44 ±0.05vdc as measured between J1-1 (high) and J1-3 (low).
12. Repeat steps 3 through 10.
13. With the multimeter, adjust the external power supply to 28.00 ±0.05vdc as measured between J1-1 (high) and J1-3 (low).
14. Repeat steps 3 through 10.

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4. While monitoring voltmeter No. 1, adjust the power supply to 27.0 ± 0.1 volts (see Figure 4). Record the voltage displayed on voltmeter no. 1 on TDS 3 (MLB voltage at 27V).

5. Record the operating current on TDS 3 using digital multimeter.

6. Compute the operating power (watts) as explained in TDS 3.

7. Adjust the power supply to 28.0 ± 0.1 volts and record voltage on TDS 3.

8. Record the operating current on TDS 3.

9. Compute the operating power (watts) as explained in TDS 3.

10. Adjust the power supply to 29.0 ± 0.1 volts and record voltage on TDS 3.

11. Record the operating current on TDS 3.

12. Compute the operating power (watts) as explained in TDS 3.

13. Adjust the power supply to 28.0 ± 0.5 Vdc.

3.2.4.2.1.3 Transient Susceptibility and Power Quality Tests

The tests that follow will demonstrate the AMSU-A2 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines.

3.2.4.2.1.3.1 Equipment Setup

Setup the test equipment and connect to the instrument as shown in Figure 4A.

3.2.4.2.1.3.2.1 Low Frequency Load Induced Transients

The AMSU instrument shall be capable of normal operation during and after positive and negative transients are injected into the power line at the amplitude and duration specified in Figure 4B. Perform the Low Frequency Load Induced Transients as follows:

a. With the exception of the external power supply, turn ON all the test equipment.
b. Place the Signal Generator in ARB 0 mode. With the external power supply OFF, while monitoring the o'scope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 4B.
c. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
d. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
e. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21. Attach printouts to TDS 41.
f. Connect the signal generator to the external power supply. Wait for the instrument to complete 3 scans. Remove the signal generator output to the power supply.
g. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21. Attach printouts to TDS 41.
j. Record any deviations in the functional performance of the AMSU instrument on TDS 41.

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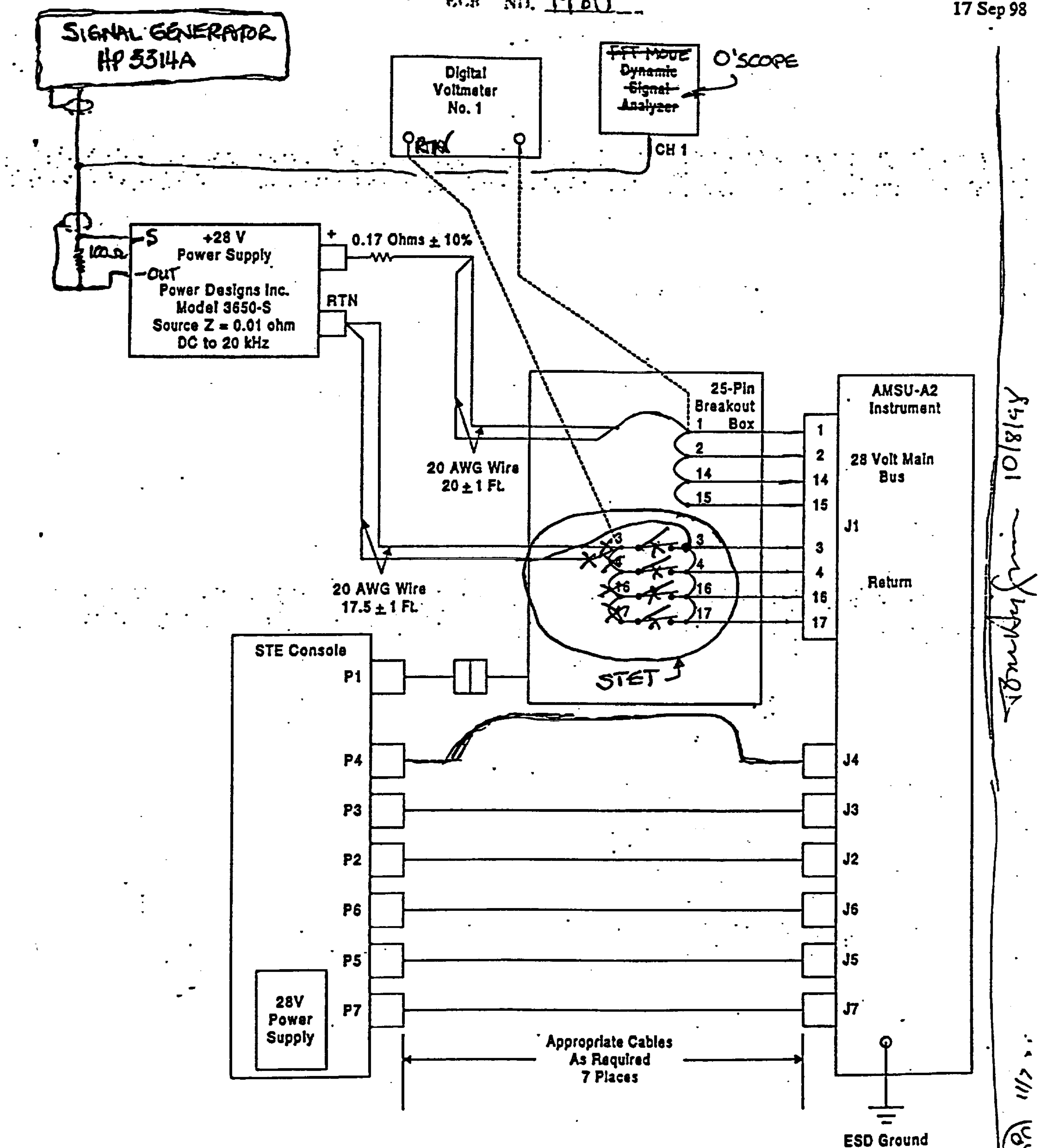

Figure 4A,+28V Main Load Bus Verification Setup

3.2.4.2.1.3.2.2 **High Frequency Load Induced Transients**

The AMSU instrument shall be capable of normal operation during and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the o'scope are:

Frequency (Hz)	Amplitude
1.43	200 mvpp
2.86	1.00 vpp
6.67	1.50 vpp

Perform the High Frequency Load Induced Transients as follows:

a. With the exception of the external power supply, turn ON all the test equipment.
b. With the external power supply OFF, while monitoring the o'scope, adjust the amplitude and frequency output of the signal generator output as follows:

    amplitude...................... 200mvpp
    offset...................... 0.000V
    frequency...................... 1.430Hz

c. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
d. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
e. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
f. Connect the signal generator to the external power supply. Wait for the instrument to complete 3 scans. Remove the signal generator output to the power supply.
g. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
h. Adjust the signal generator frequency to 2.86Hz; adjust the signal generator amplitude to read 1.00vpp. Reconnect the signal generator to the power supply.
i. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
j. Adjust the signal generator frequency to 6.676Hz; adjust the signal generator amplitude to read 1.50vpp. Reconnect the signal generator to the power supply.
k. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
l. Disconnect the signal generator from the power supply.
m. Record any deviations in the functional performance of the AMSU instrument on TDS 41.

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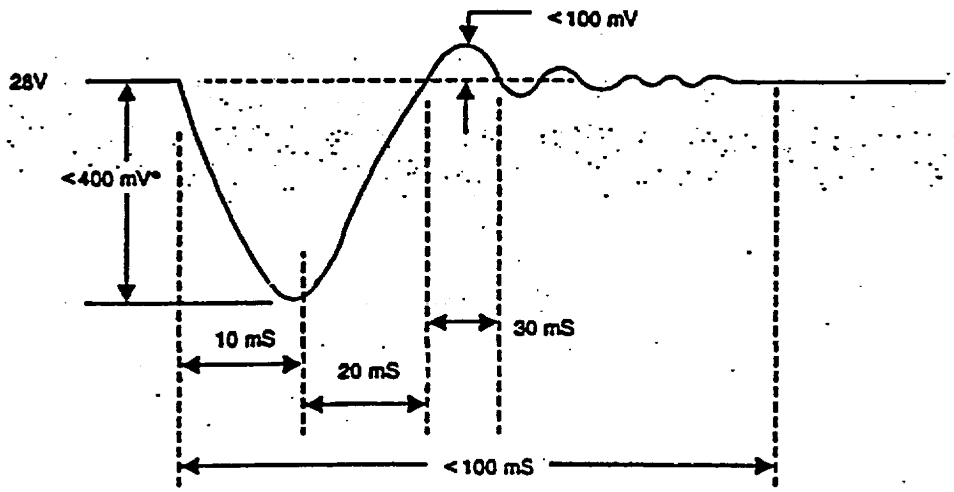

* Typical transients occurring a number of times per orbit are on the order of 200 mV zero-to-peak for a 1.5A load change.

Figure ~~29~~ 4B. Load Induced Transient (Main Bus)

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14d.

8. Disconnect the signal generator from the power supply and,

f. Connect the signal generator to the external power supply as previously connected~~; adjust the amplitude of the generator as required to match the signal characteristics found in step b above.~~

~~g. Acquire two (2) Full Scan Mode printouts; verify the printouts meet the requirements of TDS 18.~~ ANC

~~h.~~ Adjust the signal generator frequency to 2.86Hz; adjust the signal generator amplitude to read 1.00vpp. Connect the signal generator to the power supply

~~i.~~ ~~Acquire two (2) Full Scan Mode printouts; verify the printouts meet the requirements of TDS 18.~~ ANC

~~j.~~ Adjust the signal generator frequency to 6.676Hz; adjust the signal generator amplitude to read 1.50vpp. Connect the signal Generator to the power supply

~~k.~~ ~~Acquire two (2) Full Scan Mode printouts; verify the printouts meet the requirements of TDS 18.~~ ANC

~~l.~~ Disconnect the signal generator from the power supply.

~~m.~~ Acquire ~~two (2)~~ Full Scan Mode printouts; verify the printouts meet the requirements of TDS 18. ANC

~~n.~~ Record any deviations in the functional performance of the AMSU instrument on TDS 41.

3.2.4.2.1.4 Instrument Feedback Test

The instrument feedback test contained in the following paragraphs will be performed on the 28VDC Main Load Bus power line. The peak to peak ripple current shall not exceed 75ma, and frequency components of the ripple shall not exceed 100KHz. If there is a predominant frequency component it shall not be a submultiple of the frequency band 121.5MHz ±15kHz.

3.2.4.2.1.4.1 28VDC Main Bus Load Ripple Current Measurement

a) Connect the instrument and test equipment as shown in Figure 4.

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3.2.4.2.1.4.1 28VDC Main Bus Load Ripple Current Measurement

a) Connect the instrument and test equipment as shown in Figure 4.

b) Set up the DSA as shown below:

Select MEAS MODE
- Select *Time Capture*
- Select *Capture Select*
- Select *Capture Length*; Enter 8.0; Select *Sec*

Select FREQ
- Select E SMPL *Off*
- Select *Time Length*; Enter 8.0; Select *Sec*

Select SELECT MEAS
- Select *Power Spec*
- Select *CH1 Active*

Select WINDOW
- Select *Hann*

Select SOURCE
- Select Source *Off*

Select AVG
- Select Avg *Off*
- Select Tim Av *Off*

Select RANGE
- Select *Chan 1 Range*; Enter 1; Select *V*

Select INPUT COUPLE
- Select CH1 *DC*
- Select CH 1 *Ground*

Select INPUT TRIG
- Select *Free Run*

Select TRIG DELAY
- Enter 0.0; Select *uSec*

Select COORD
- Select *Real*

Select VIEW INPUT
- Select *Time Buff*

Select SCALE
- Select *X Fixd Scale*; Enter 0.0,8.0; Select *Sec*
- Select *Y Fixd Scale*; Enter 0,1; Select *V*

Select UNITS
- Select *Hz (sec)*

c) Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5

d) Acquire 8 seconds of data by depressing *Start Capture*.

e) Turn OFF the "X" cursor if it is ON. Turn the "X" cursor back ON. The cursor will appear at the largest peak. Make a plot of this display.

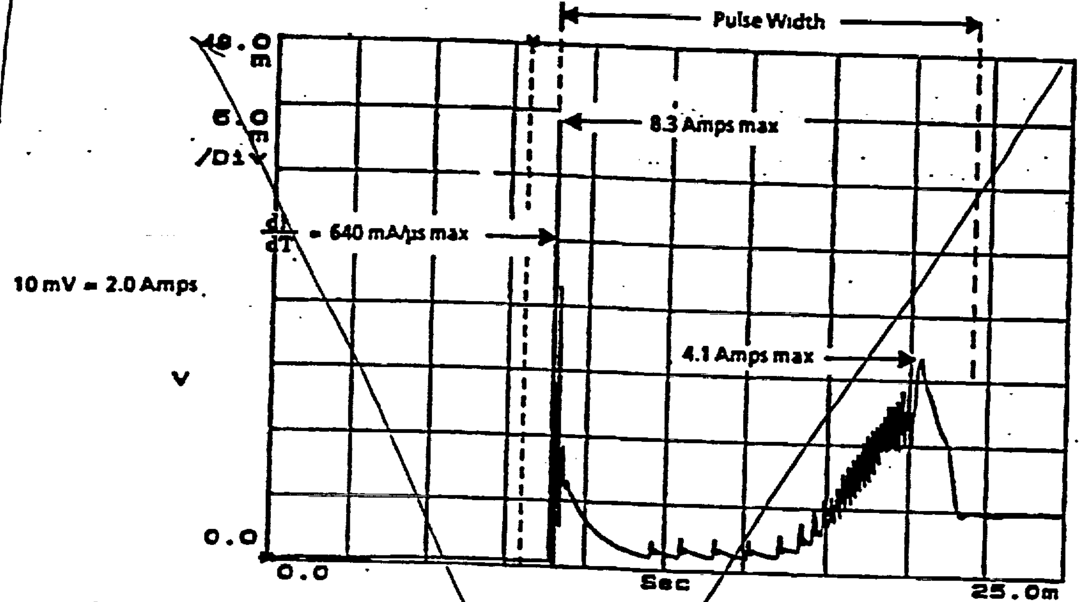
f) Select the x axis scale for 500 ms with the largest peak approximately in the middle of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak to peak current. Make a plot of this display.

g) Compute the peak to peak current as follows:

Multiply the delta Y value by the current/ div as selected on the current amplifier. As an example: if the current amplifier is set up to display 20 ma/ 10 mv per division, and the delta Y value = 276µv:

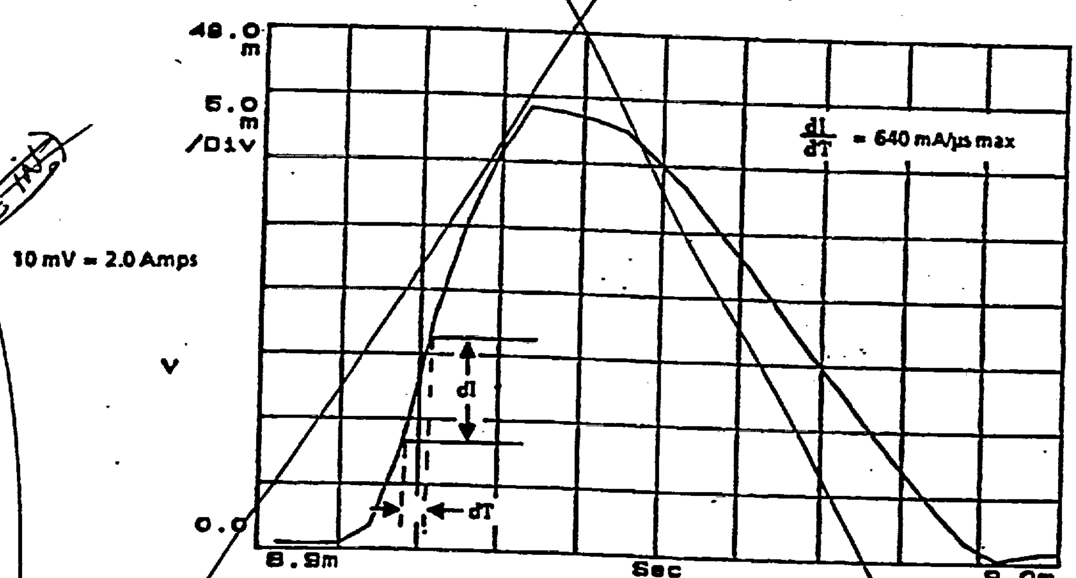
$$.276\text{mv} \times (20\text{ma}/10\text{mv}) = .552\text{ma}$$

Record this value on TDS 42 (maximum acceptable limit is 75 ma peak to peak)



1 div = 2.5 ms

AMSU-A2 (S/N 102) Main Load Bus Worst Case Turn-on Transient at 28.56 Vdc.



1 div = 0.01 ms

AMSU-A2 (S/N 102) Main Load Bus $\frac{dI}{dT}$ at Worst Case Turn-on Transient at 28.56 Vdc.

Figure 5. +28V Main Bus Load Peak Power for KLM (S/N 102, 103, and 104)

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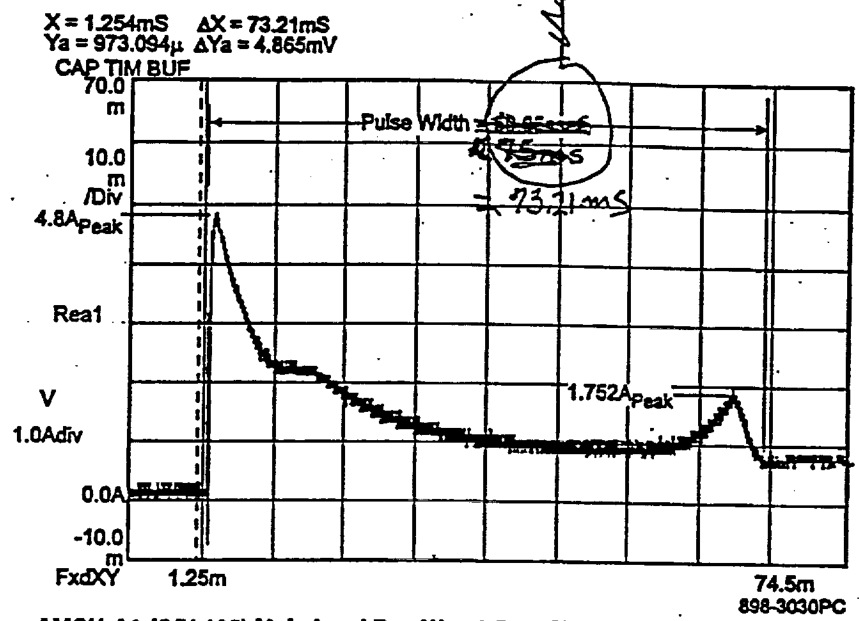
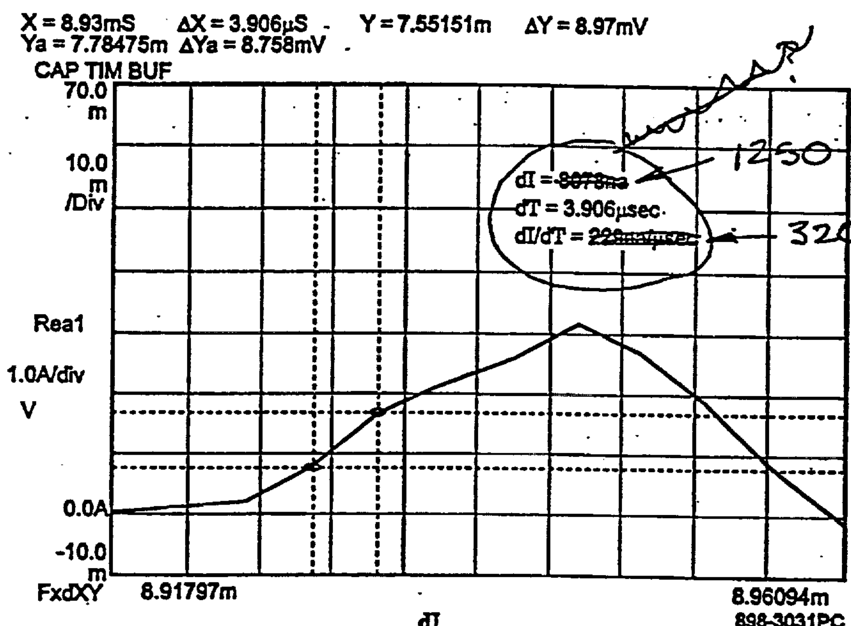


AMSU-A2 (S/N 105) Main Load Bus Worst Case Turn-on Transient at 28.56 Vdc



AMSU-A2 (S/N 105) Main Load Bus $\frac{dI}{dT}$ at Worst Case Turn-on Transient at 28.56 Vdc

Figure 6. Example of +28V Main Bus Load Peak Power for METSAT (S/N 105 and up)

c. ~~Turn the spectrum analyzer ON and set it up as follows (the analyzer will be used to verify ripple current does not exceed 100KHz):~~

~~Select *Frequency*~~
~~Select *Start Freq*; Enter 1KHz~~
~~Select *Stop Freq*; Enter 250KHz~~
~~Select *Amplitude*~~
~~Select *Atten*; Enter Auto~~
~~Select *Scale*; Enter Log~~
~~[Control] Select *Sweep*~~
~~Select *Swp Time*; Enter Auto~~
~~Select *Sweep*; Enter Cont~~
~~[Control] Select *BW*~~
~~Select *Res Bw*; Enter Man; Enter 1.0KHz~~
~~Select *Video BW*; Enter Auto~~

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~~NOTE~~

~~Select Amplitude and use the Step ↑ or ↓ to acquire a measurable signal. Also select MKR in [Marker] and use the knob to position the cursor at the frequency of interest.~~

~~d. The frequency of ripple shall not exceed 100KHz nor be a sub-multiple of the frequency band 121.5MHz ±15KHz.~~

3.2.4.2.2 *+28V pulse load bus test.* The PLB shall be verified during the following intervals:

a. First two seconds (3.2.4.2.2.1)

b. From 2 to 4 seconds (3.2.4.2.2.2)

c. From 4 to 6 seconds (3.2.4.2.2.3)

d. From 6 to 8 seconds (3.2.4.2.2.4)

f. ~~e.~~ PLB turn-on transient (3.2.4.2.2.5)

g. ~~f.~~ PLB current in warm cal, cold cal, and nadir modes (3.2.4.2.2.6)

e. g. 8 second PLB Integration (current)

h. Instrument feedback

i. Transient susceptibility

3.2.4.2.2.1 *PLB during the first two seconds*. The PLB operation, during the first two seconds, shall be verified as follows:

1. Configure the unit and test equipment as indicated in Figure 7. Verify that switches 5, 6, 18 and 19 of the breakout box are in the OPEN position. Disconnect +28 Vdc external power supply output and adjust the power supply to read 28.00 Vdc ± 0.05 Vdc by using a digital voltmeter. Connect the power supply output as shown in Figure 7.

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2. Configure the dynamic signal analyzer as follows:

Select MEAS MODE
- Select *Time Capture*
- Select *Capture Select*
- Select *Capture Length*; Enter 1; Select *Record*

Select FREQ
- Select *Freq Span*; Enter ~~100.0~~ 1.0K; Select *Hz*
- Select E SMPL *Off*
- Select *Time Length*; Enter 8.0; Select *Sec*

Select SELECT MEAS
- Select *Power Spec*
- Select CH1 *Active*

Select WINDOW
- Select *Hann*

Select SOURCE
- Select Source *Off*

Select AVG
- Select Avg *Off*
- Select Tim Av *Off*

Select RANGE
- Select *Aut 1 Rng up*

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Select INPUT COUPLE
- Select CH1 *DC*
- Select CH 1*Ground*

Select SELECT TRIG
- Select *Trig Level*; Enter 1.5; Select *V*
- Select Arm *AU*
- Select *Ext*
- Select *Slope -*

Select TRIG DELAY
- Enter 0.0; Select *Sec*

Select COORD
- Select *Real*

Select VIEW INPUT
- Select *Time Buff*

Select SCALE
- Select *X Fixd Scale*; Enter 0.0,8.0; Select *Sec*
- Select *Y Fixd Scale*; Enter -10.0,70.0; Select *mv*

Select UNITS
- Select *Hz (sec)*

- NOTE -

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

a) Select 200ma/ 10mv per div. on the current amplifier.
b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
c) Adjust the "y" axis voltage range to ± 4mv
d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
f) Position the current probe to it's original location in accordance with Figure 7, and return the DSA to "Ext" trigger.

The instrument is now ready to capture and plot 8 seconds of data

3. Turn the unit ON by selecting [9] MODULE POWER, setup the operating modes as defined in paragraph 3.2.3.5. (reference the command screen parameters below). If necessary, re-adjust the external power supply for 28vdc.

[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10]	SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12]	SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13]	COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14]	ANTENNA WARM CAL POS =	NO			
POWER [4] ON					

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4. Start the DSA signal capture by depressing "Start Capture".
5. Obtain ~~an 8~~ the first 2 second PLB current waveform by selecting zero to two seconds time span. Refer to Figure 8 for a typical waveform. Turn OFF the "X" cursor if it is ON. Turn the "X" cursor ON. The cursor will appear at the highest peak. Ensure this value is less than or equal to 2.2 amps. Record value on TDS 4.
6. Compute the peak current as follows:

Multiply the maximum Y value by the current/ div as selected on the current amplifier. As an example: if the current amplifier is set up to display 200 ma/ 10 mv per division, and the maximum Y value = 276mv:

$$100\text{mv} \times (200\text{ma}/ 10\text{mv}) = 2000\text{ma} = 2.00 \text{ amps}$$

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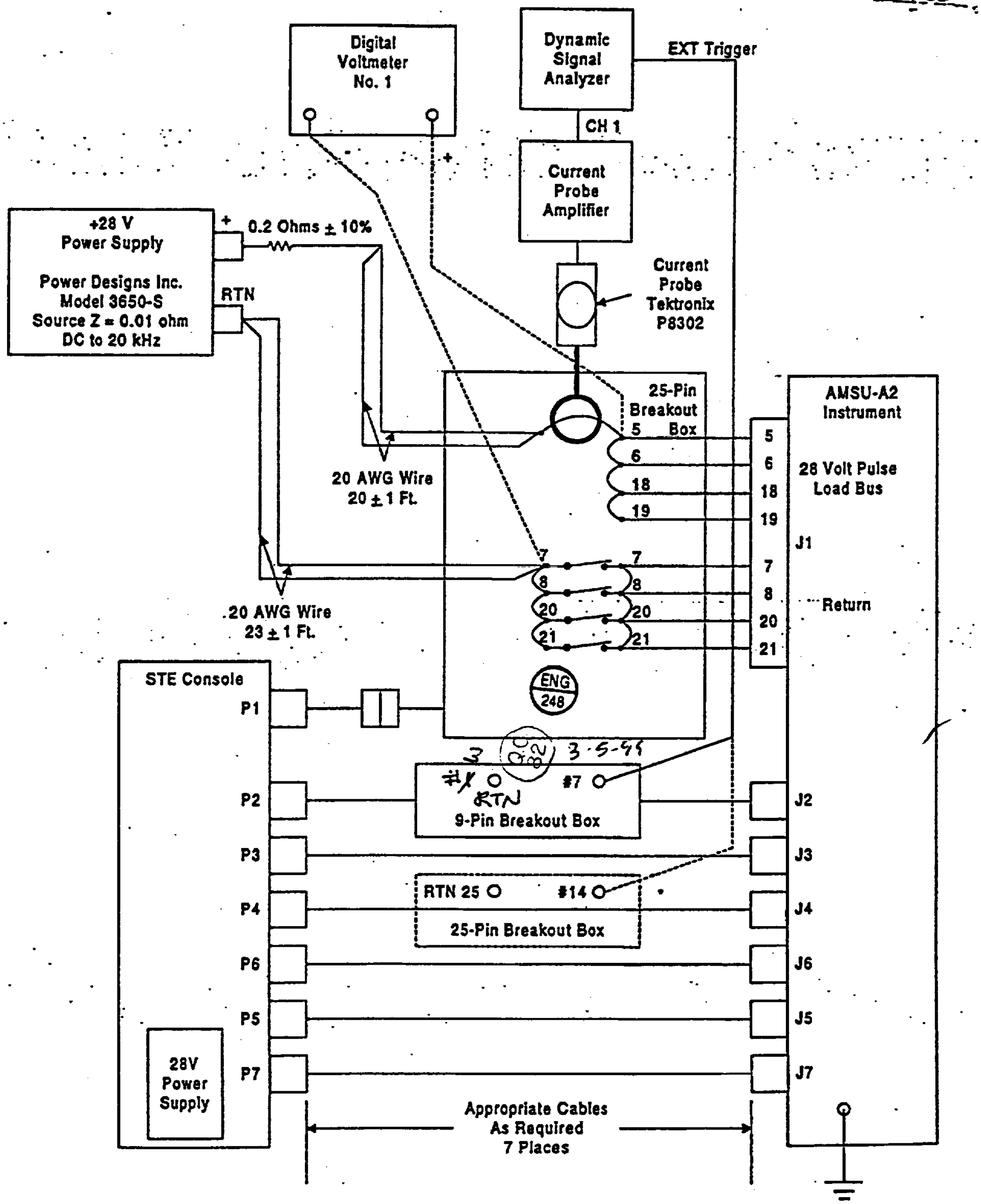

* Use this connection for PLB turn-on transient.

Figure 7. +28V Pulse Load Verification Setup

3. ~~Turn the unit ON as described in 3.2.3.5. If necessary, reset the external +28 Vdc power supply to read +28.00 ±0.05 Vdc.~~ ~~Insure Unit is in Full SCAN Mode with both the antenna mot. And Compensation motors ON.~~
~~Do not proceed without successful completion of step 3.~~

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5. ~~Obtain a hard copy of the signal displayed on the dynamic signal analyzer. Refer to Figure 8 for a typical waveform.~~

6. ~~From the hard copy obtained, calculate the peak current. Record the peak current and bus current during the integrate/hold, dump (I/H,D) time period (refer to Figure 8) values on TDS 4.~~

3.2.4.2.2.2 ***PLB measured from 2 to 4 seconds.*** The PLB operation, from 2 to 4 seconds, shall be verified as follows:

1. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 1.9 seconds.

2. Obtain a hard copy of the signal displayed on the dynamic signal analyzer (refer to Figure 8 for typical waveform) and record the peak current and bus current during the integrate/hold, dump (I/H,D) time period (refer to Figure 8) data on TDS 4.

3.2.4.2.2.3 ***PLB measured from 4 to 6 seconds.*** The PLB operation, from 4 to 6 seconds, shall be verified as follows:

1. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 3.9 seconds.

2. Obtain a hard copy of the signal displayed on the dynamic signal analyzer (refer to Figure 8 for typical waveform) and record the peak current and bus current during the integrate/hold, dump (I/H,D) time period (refer to Figure 8) data on TDS 4.

3.2.4.2.2.4 ***PLB measured from 6 to 8 seconds***

1. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 5.9 seconds.

2. Obtain a hard copy of the signal displayed on the dynamic signal analyzer (refer to Figure 8 for typical waveform) and record the peak current and bus current during the integrate/hold, dump (I/H,D) time period (refer to Figure 8) data on TDS 4.

3.2.4.2.2.5 Eight Second Integrated Current Measurement

To observe the PLB ~~Noisy Bus~~ integrated (8sec.) current waveform on the dynamic signal analyzer, configure the dynamic signal analyzer as follows:

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Select SCALE
- Select *X Fixd Scale*; Enter 0.0,8; Select *Sec*
- Select *Y Fixd Scale*; Enter -10,~~350~~ 70.0; Select mv
- Select VIEW INPUT
  - Select Time Record: Note - the display heading changes to read "Cap Tim Rec"
- Select MATH
  - Select Next

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Select Intgrt:
- Note - the display changes to present an integrated value of the current waveform.

Select X (cursor);
- Move the X marker to the maximum right of the display. The Y value is indicative of the integrated current value over the entire 8 second period.

Multiply the maximum Y value by the current/ div as selected on the current amplifier, then divide by 8 seconds to acquire an average current/ second value. As an example: if the current amplifier is set up to display 200 ma/ 10 mv per division, and the maximum Y value = 32.4 mv:

$$[32.4mv \times (200ma/ 10mv)]/ 8sec = 81ma/ sec$$

Enter the calculated integrated current value on TDS 4

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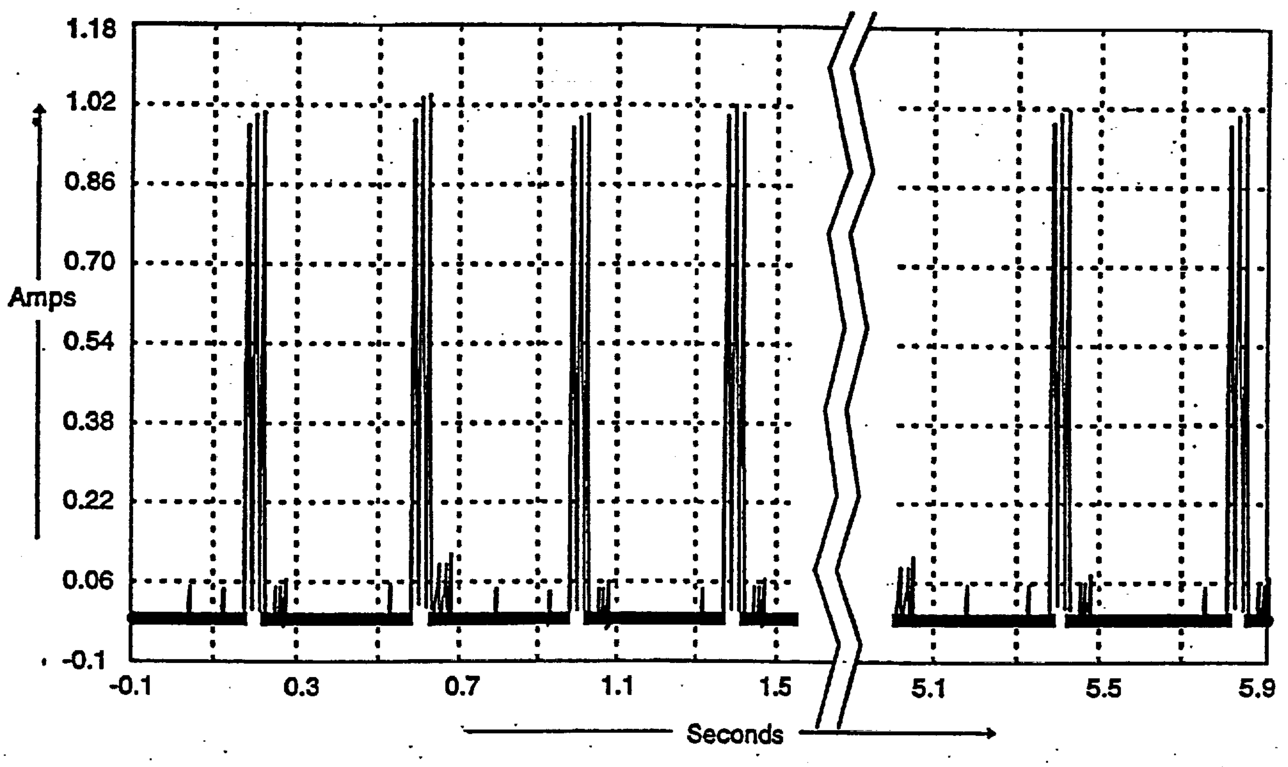

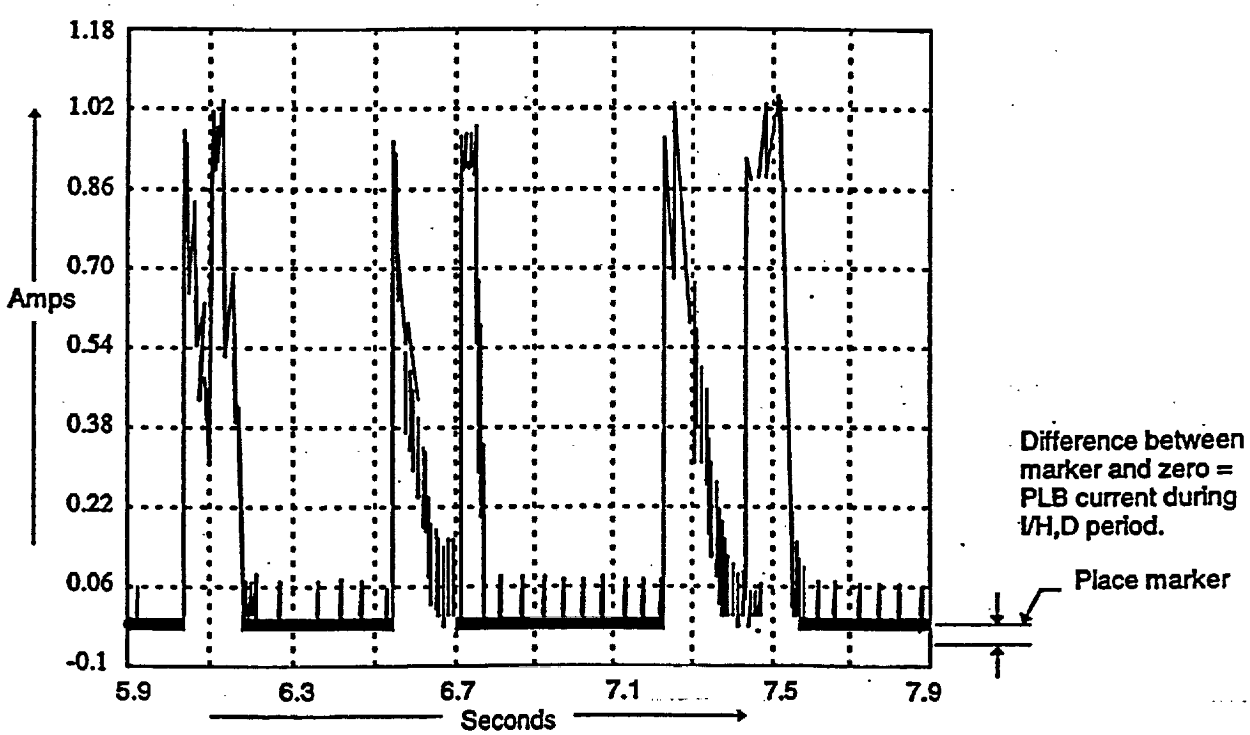

Figure 8. Typical Load Current Waveforms from the +28V Pulse Load Bus

3.2.4.2.2.6 *PLB current in warm cal, cold cal, and nadir modes.* PLB current shall be tested as follows:

1. Place the unit in warm cal mode.
2. Measure and record PLB steady state current on TDS 4. with a multimeter in the current mode
3. Place the unit in cold cal mode and repeat step 2.
4. Place the unit in nadir mode and repeat step 2.

3.2.4.2.2.~~6~~ 7 *PLB turn-on transient*

1. Configure the unit and test equipment as shown in Figure 7. Verify that switches 5, 6, 18 and 19 of the breakout box are in the OPEN position. Connect the DSA External trigger to the identified pins on the 25 pin breakout box
2. Configure the dynamic signal analyzer as follows:

~~(a) Time capture mode~~

~~(b) External trigger~~

~~(c) Trigger level = 1V~~

~~(d) Slope = –~~

~~(e) Time span: zero to 0.2 seconds~~

~~(f) Scale: (select at test)~~

~~(g) Pre-trigger delay: 0.0 seconds~~

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3.2.4.2.2.8 **Instrument Feedback Test (PLB)**

The instrument feedback test contained in the following paragraphs will be performed on the 28VDC Pulse Load power line. The peak to peak ripple current shall not exceed 86ma while the instrument is in the Warm Cal mode.

3.2.4.2.2.8.1 **28VDC Pulse Load Bus Ripple Current Measurement**

... test equipment as shown in Figure 7.

b) Set up the DSA as shown below:

Select **MEAS MODE**
- Select *Time Capture*
- Select *Capture Select*
- Select *Capture Length*; Enter 8.0; Select *Sec*

Select **FREQ**
- Select E SMPL *Off*
- Select *Time Length*; Enter 8.0; Select *Sec*

Select **SELECT MEAS**
- Select *Power Spec*
- Select *CH1 Active*

Select **WINDOW**
- Select *Hann*

Select **SOURCE**
- Select Source *Off*

Select **AVG**
- Select Avg *Off*
- Select Tim Av *Off*

Select **RANGE**
- Select *Chan 1 Range*; Enter 1; Select *V*

Select **INPUT COUPLE**
- Select CH1 *DC*
- Select CH 1*Ground*

Select **INPUT TRIG**
- Select *Free Run*

Select **TRIG DELAY**
- Enter 0.0; Select *uSec*

Select **COORD**
- Select *Real*

Select **VIEW INPUT**
- Select *Time Buff*

Select **SCALE**
- Select *X Fixd Scale*; Enter 0.0,8.0; Select *Sec*
- Select *Y Fixd Scale*; Enter 0,1; Select *V*

Select **UNITS**
- Select *Hz (sec)*

c) Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5

d) Acquire 8 seconds of data by depressing *Start Capture.*

e) Turn OFF the "X" cursor if it is ON. Turn the "X" cursor back ON. The cursor will appear at the largest peak. Make a plot of this display.

f) Select the x axis scale for 500 ms with the largest peak approximately in the middle of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak to peak current. Make a plot of this display.

g) Compute the peak to peak current as follows:

Multiply the delta Y value by the current/ div as selected on the current amplifier. As an example: if the current amplifier is set up to display 20 ma/ 10 mv per division, and the delta Y value = 276μv:

$$.276mv \times (20ma/\ 10mv) = .552ma$$

Record this value on TDS 42 (maximum acceptable limit is 86 ma peak to peak)

2. Configure the Dynamic Signal Analyzer (DSA) as follows:

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Select **MEAS MODE**
- Select *Time Capture*
- Select *Capture Select*
- Select *Capture Length*; Enter 500.0; Select *msec*

Select **FREQ**
- Select *Freq Span*; Enter ~~25.0~~ 20.0; Select *KHz*
- Select E SMPL *Off*
- Select *Time Length*; Enter 32.0; Select *msec*

Select **SELECT MEAS**
- Select *Power Spec*
- Select *CH1 Active*

Select **WINDOW**
- Select *Hann*

Select **SOURCE**
- Select Source *Off*

Select **AVG**
- Select Avg *Off*
- Select Tim Av *Off*

Select **RANGE**
- Select *Chan 1 Range*; Enter 1; Select *V*

Select **INPUT COUPLE**
- Select CH1 *DC*
- Select CH 1*Ground*

Select **INPUT TRIG**
- Select *Trig Level*; Enter 1; Select *V*
- Select Arm *AU*
- Select *External*
- Select *Slope (-)*

Select **TRIG DELAY**
- Enter 0; Select *uSec*

Select **COORD**
- Select *Real*

Select **VIEW INPUT**
- Select *Time Buff*

Select **SCALE**
- Select *X Fixd Scale*; Enter 0.0,25; Select *msec*
- Select *Y Fixd Scale*; Enter -10, 470; Select *mv*

Select **UNITS**
- Select *Hz (sec)*

- NOTE -

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

a) Select 200ma/ 10mv per div. on the current amplifier.
b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
c) Adjust the "y" axis voltage range to ± 4mv
d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
f) Position the current probe to it's original location in accordance with Figure ~~4~~ 7, and return the DSA to "Ext" trigger.

4. Adjust external power supply for +28vdc. Turn the unit ON by selecting [9] MODULE POWER, setup the operating modes as defined in paragraph 3.2.3.5. (reference the command screen parameters below). If necessary re-adjust external power supply for 28vdc.

[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10]	SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12]	SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13]	COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14]	ANTENNA WARM CAL POS =	NO			
POWER [4] ON					

5. Turn the unit OFF by executing command [9] MODULE POWER. Confirm the command has been executed on the STE display.
6. Start the DSA signal capture by depressing "Start Capture"; wait for the DSA message "waiting for trigger" before proceeding.
7. On the STE computer, select [9] MODULE POWER and obtain a record of the +28 PLB Turn on current waveform. On the STE computer, select [9] MODULE POWER to turn the instrument's power OFF. Adjust the display time base and voltage sensitivity to allow for adequate current and pulse duration measurements. Plot the obtained waveform and attach a hard copy of the scan to TDS 4. Refer to Figure 9 for an example of the expected waveform.
8. Measure the Turn On pulse width; record this value in TDS 4 .
9. Compute the peak current as follows:

   Multiply the maximum Y value by the current/ div as selected on the current amplifier. As an example: if the current amplifier is set up to display 200 ma/ 10 mv per division, and the maximum Y value = 276mv:

   276mv x (200ma/ 10mv) = 5520ma = 5.52 amps

   Record this value on TDS 4

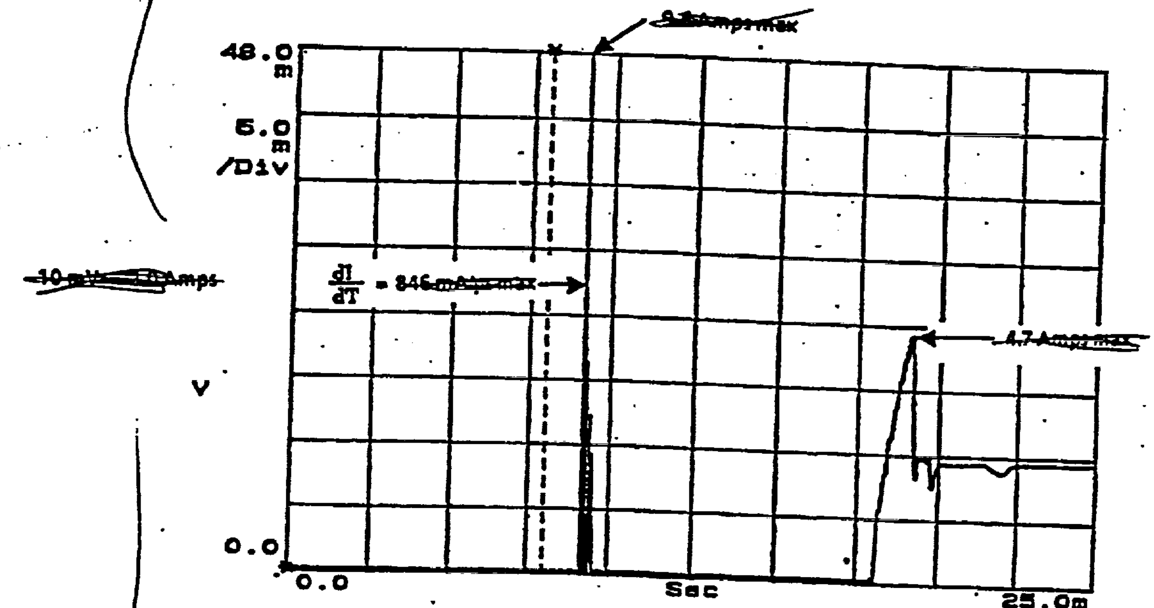
9. The 1st derivative of the current waveform must be calculated. Compute the dI/ dT as follows:

   The most probable location of the greatest current demand is during the first positive transition after voltage application. If this is the case, expand that segment of the display and measure the greatest voltage transition in the smallest time transition. The change in voltage times the current/ div as selected on the current amplifier produces the change in current. Next divide this change in current by the change in time (in microseconds). This value is dI/ dT. Example:

   Change in voltage.. 144 mv
   Change in time (microseconds)...................... 19.5 us
   Current/ div on current amp 200ma/ 10mv

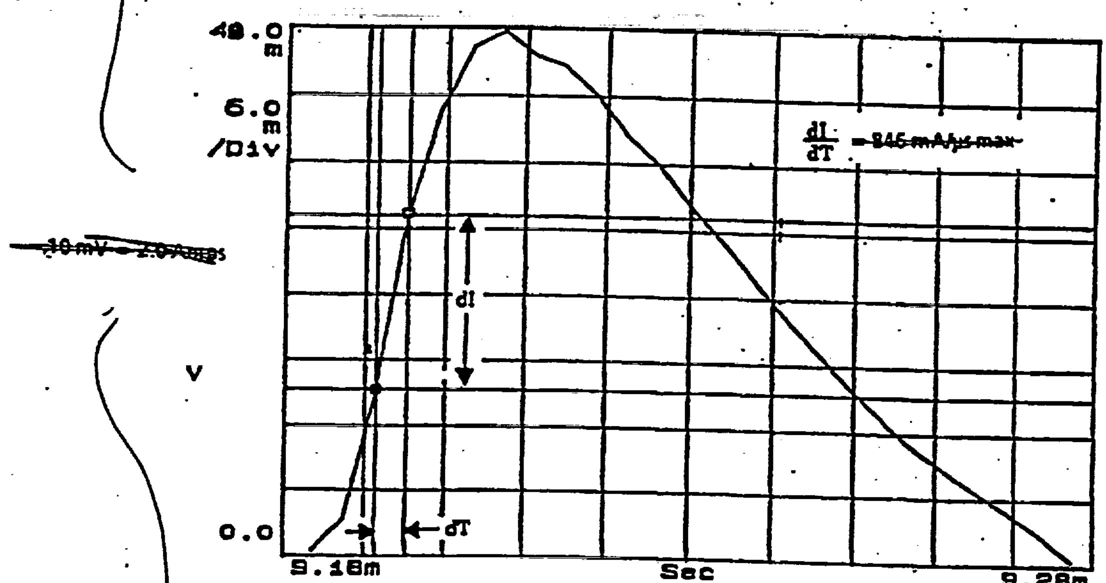
   144mv x (200ma/ 10mv)/ 19.5us = 147.7ma per us

10. Record the computed value on TDS 4.



1 div = 2.5 ms

AMSU-A2 Pulse Load Bus Turn-on Transient



1 div = 0.01 ms

AMSU-A2 Pulse Load Bus $\frac{dI}{dT}$

Figure 9. Example of +28V Pulse Load Bus Turn-on Transient

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3.2.4.2.2.9 Transient Susceptibility and Power Quality Tests

The tests that follow will demonstrate the AMSU-A2 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines.

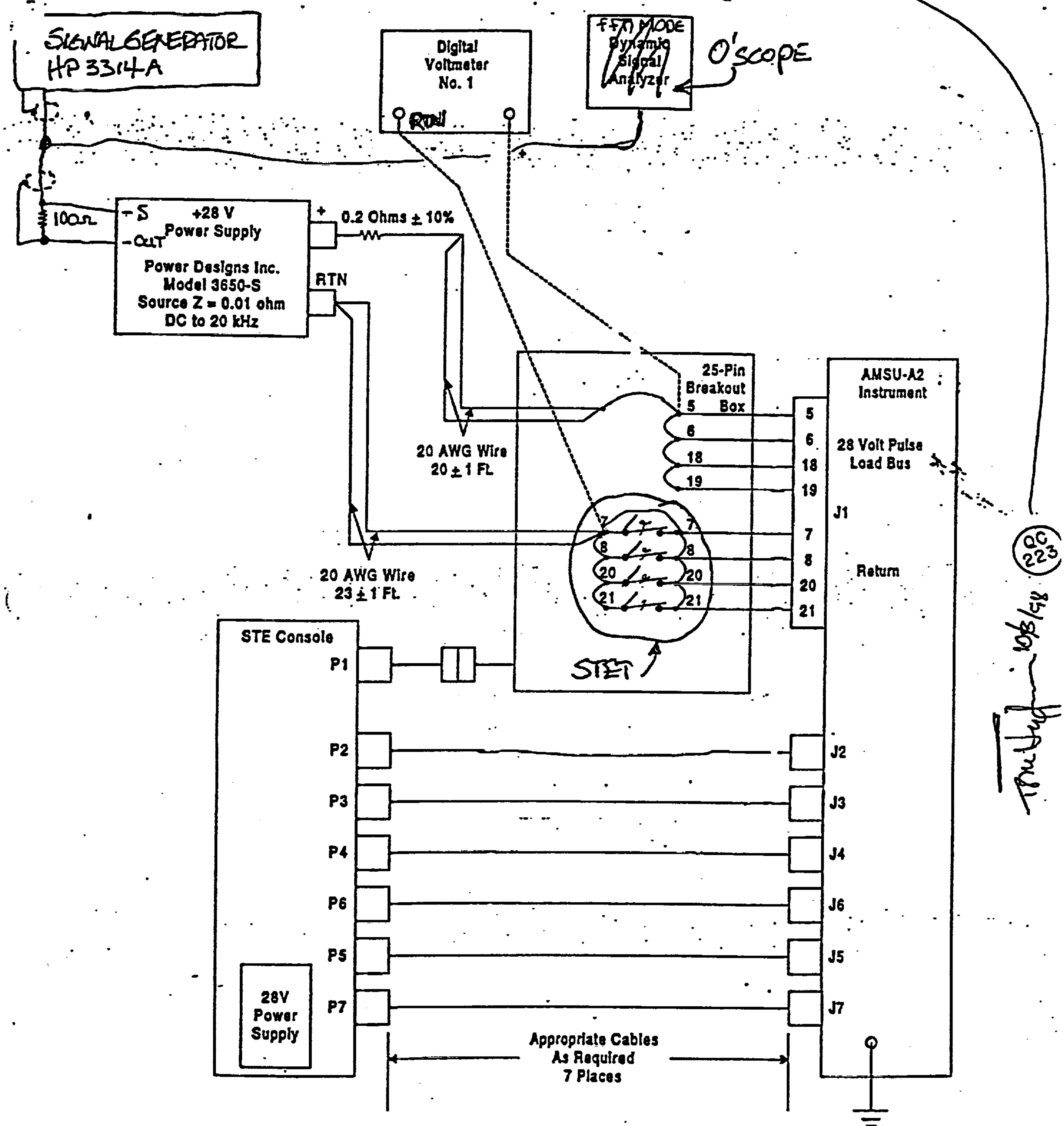
3.2.4.2.2.9.1 Equipment Setup

Setup the test equipment and connect to the instrument as shown in Figure 7A.

3.2.4.2.2.9.2 Low Frequency Load Induced Transients

The AMSU instrument shall be capable of normal operation during and after positive and negative transients are injected into the Pulse Load Bus power line at the amplitude and duration specified in Figure 7B. Perform the Low Frequency Load Induced Transients as follows:

a. With the exception of the external power supply, turn ON all the test equipment.
b. Place the Signal Generator in ARB 1 mode. With the external power supply OFF, while monitoring the o'scope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 7B.
c. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
d. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
e. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21. Attach printouts to TDS 41.
f. Connect the signal generator to the external power supply. Wait for the instrument to complete 3 scans. Remove the signal generator output to the power supply.
g. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21. Attach printouts to TDS 41.
j. Record any deviations in the functional performance of the AMSU instrument on TDS 41.



* Use this connection for PLB turn-on transient.

Figure 7A +28V Pulse Load Verification Setup

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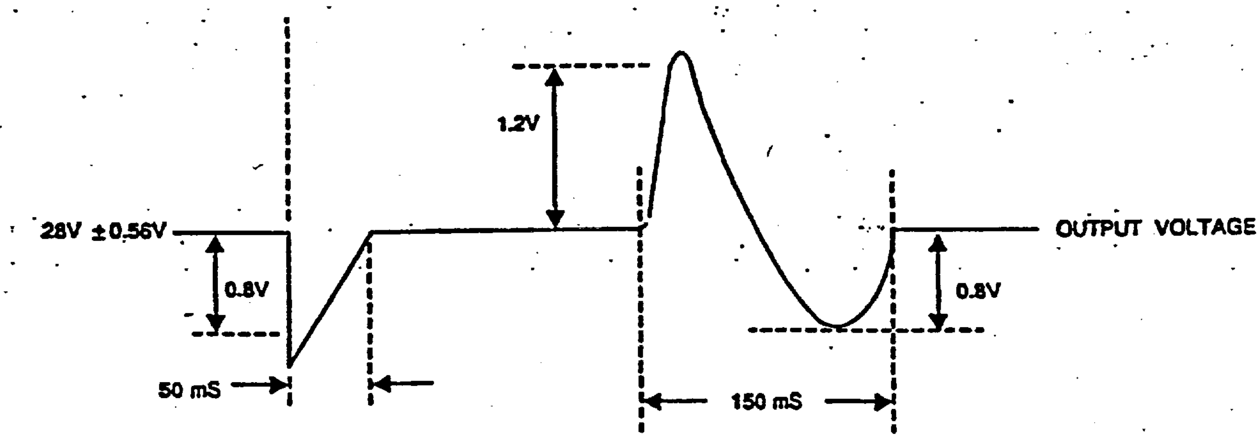

FIGURE 7B Load Induced Transient (Pulse Load)

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3.2.4.2.2.9.3 High Frequency Load Induced Transients

The AMSU instrument shall be capable of normal operation during and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the o'scope are:

Frequency (Hz)	Amplitude
1.43	200 mvpp
2.86	1.00 vpp
6.67	1.50 vpp

Perform the High Frequency Load Induced Transients as follows:

a. With the exception of the external power supply, turn ON all the test equipment.
b. With the external power supply OFF, while monitoring the o'scope, adjust the amplitude and frequency output of the signal generator output as follows:

amplitude	200mvpp
offset	0.000V
frequency	1.430Hz

c. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
d. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
e. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
f. Connect the signal generator to the external power supply. Wait for the instrument to complete 3 scans. Remove the signal generator output to the power supply.
g. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
h. Adjust the signal generator frequency to 2.86Hz; adjust the signal generator amplitude to read 1.00vpp. Reconnect the signal generator to the power supply.
i. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
j. Adjust the signal generator frequency to 6.676Hz; adjust the signal generator amplitude to read 1.50vpp. Reconnect the signal generator to the power supply.
k. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
l. Disconnect the signal generator from the power supply.
m. Record any deviations in the functional performance of the AMSU instrument on TDS 41.

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3.2.4.2.3 Analog Telemetry Bus

3.2.4.2.3.1 Operating Power Measurements

The purpose of this test is to calculate the operating power of the Analog Telemetry Bus from measurements taken of the bus voltage and current.

1. Configure the instrument as shown in Figure 10
2. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
3. Measure the bus current and voltage, and record on TDS 5
4. From the measurements recorded on TDS 5, calculate the operating power for the telemetry bus and record on TDS 5

3.2.4.2.3.2 Instrument Feedback Test

The instrument feedback test contained in the following paragraphs will be performed on the Analog Telemetry Bus power line. The peak to peak ripple current shall not exceed ~~75ma.~~ .22ma

3.2.4.2.3.2.1 28VDC Analog Telemetry Bus Ripple Current Measurement

SEE page 20A

~~a. Connect the instrument and the test equipment as shown in Figure 10A (do not connect the signal generator to the power supply for this test).~~
~~b. On the STE computer, turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3. Monitor the +28 Analog Telemetry Bus current waveform on the o'scope. Adjust the display time base and voltage sensitivity to allow for adequate current measurements. Record the peak to peak ripple current on TDS 42 maximum limit is .22ma peak to peak.~~

3.2.4.2.3.3 Transient Susceptibility and Power Quality Tests

The tests that follow will demonstrate the AMSU-A2 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines.

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a) Connect the instrument and test equipment as shown in Figure 10A. NOTE: <u>DO NOT</u> connect the signal generator for this segment of the test.

b) Set up the DSA as shown below:

Select **MEAS MODE**
- Select *Time Capture*
- Select *Capture Select*
- Select *Capture Length*; Enter 8.0; Select *Sec*

Select **FREQ**
- Select E SMPL *Off*
- Select *Time Length*; Enter 8.0; Select *Sec*

Select **SELECT MEAS**
- Select *Power Spec*
- Select *CH1 Active*

Select **WINDOW**
- Select *Hann*

Select **SOURCE**
- Select Source *Off*

Select **AVG**
- Select Avg *Off*
- Select Tim Av *Off*

Select **RANGE**
- Select *Chan 1 Range*; Enter 1; Select *V*

Select **INPUT COUPLE**
- Select CH1 *DC*
- Select CH 1*Ground*

Select **INPUT TRIG**
- Select *Free Run*

Select **TRIG DELAY**
- Enter 0.0; Select *uSec*

Select **COORD**
- Select *Real*

Select **VIEW INPUT**
- Select *Time Buff*

Select **SCALE**
- Select *X Fixd Scale*; Enter 0.0,8.0; Select *Sec*
- Select *Y Fixd Scale*; Enter 0,1; Select *V*

Select **UNITS**
- Select *Hz (sec)*

c) Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5

d) Acquire 8 seconds of data by depressing *Start Capture.*

e) Turn OFF the "X" cursor if it is ON. Turn the "X" cursor back ON. The cursor will appear at the largest peak. Make a plot of this display.

f) Select the x axis scale for 500 ms with the largest peak approximately in the middle of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak to peak current. Make a plot of this display.

g) Compute the peak to peak current as follows:

Multiply the delta Y value by the current/ div as selected on the current amplifier. As an example: if the current amplifier is set up to display 20 ma/ 10 mv per division, and the delta Y value = 276µv:

$$.276\text{mv} \times (20\text{ma}/\ 10\text{mv}) = .552\text{ma}$$

Record this value on TDS 42 (maximum acceptable limit is .22 ma peak to peak)

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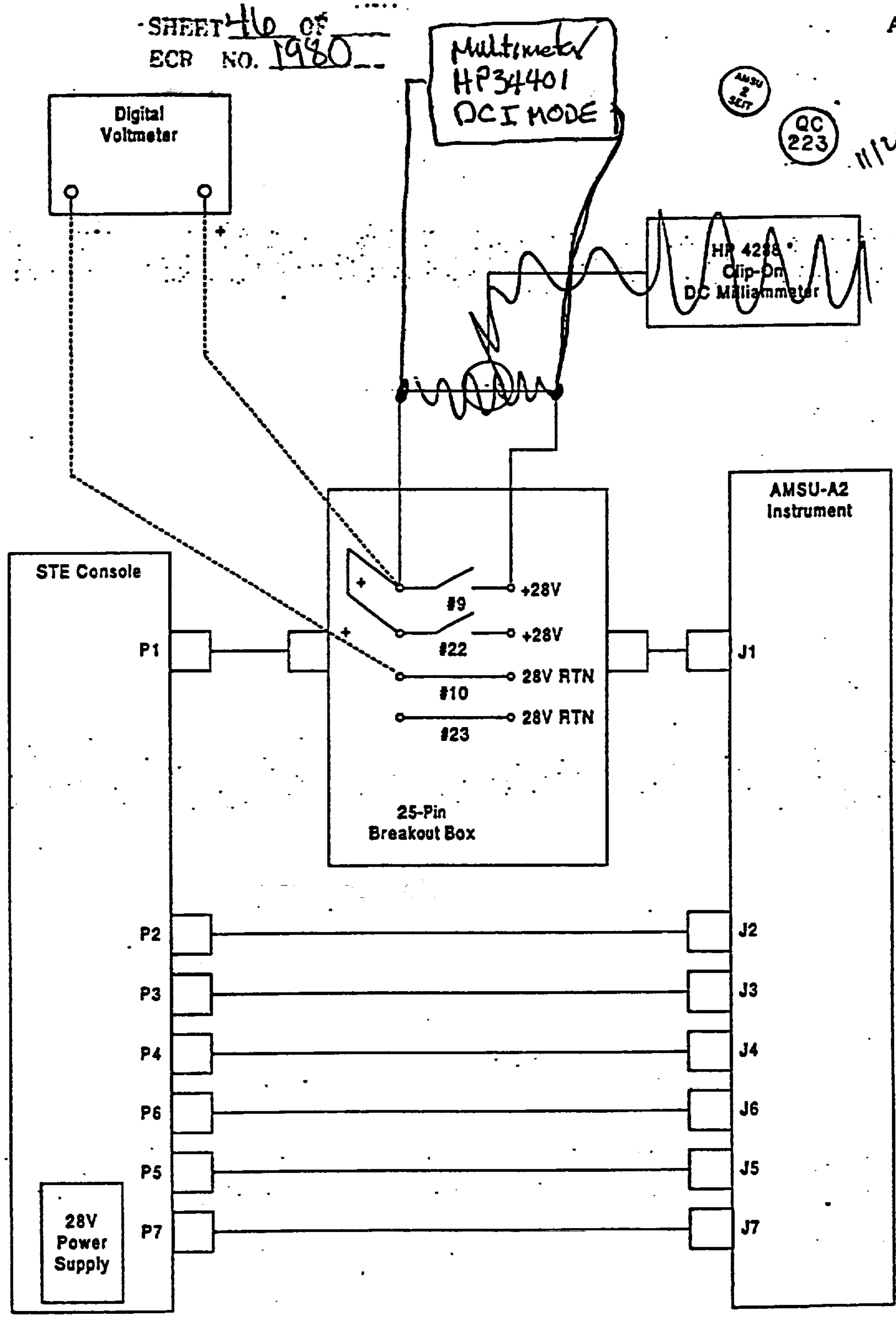

* Inline current meter (Fluke 77) can be used.

Figure 10. +28V Analog Telemetry Bus Test Setup

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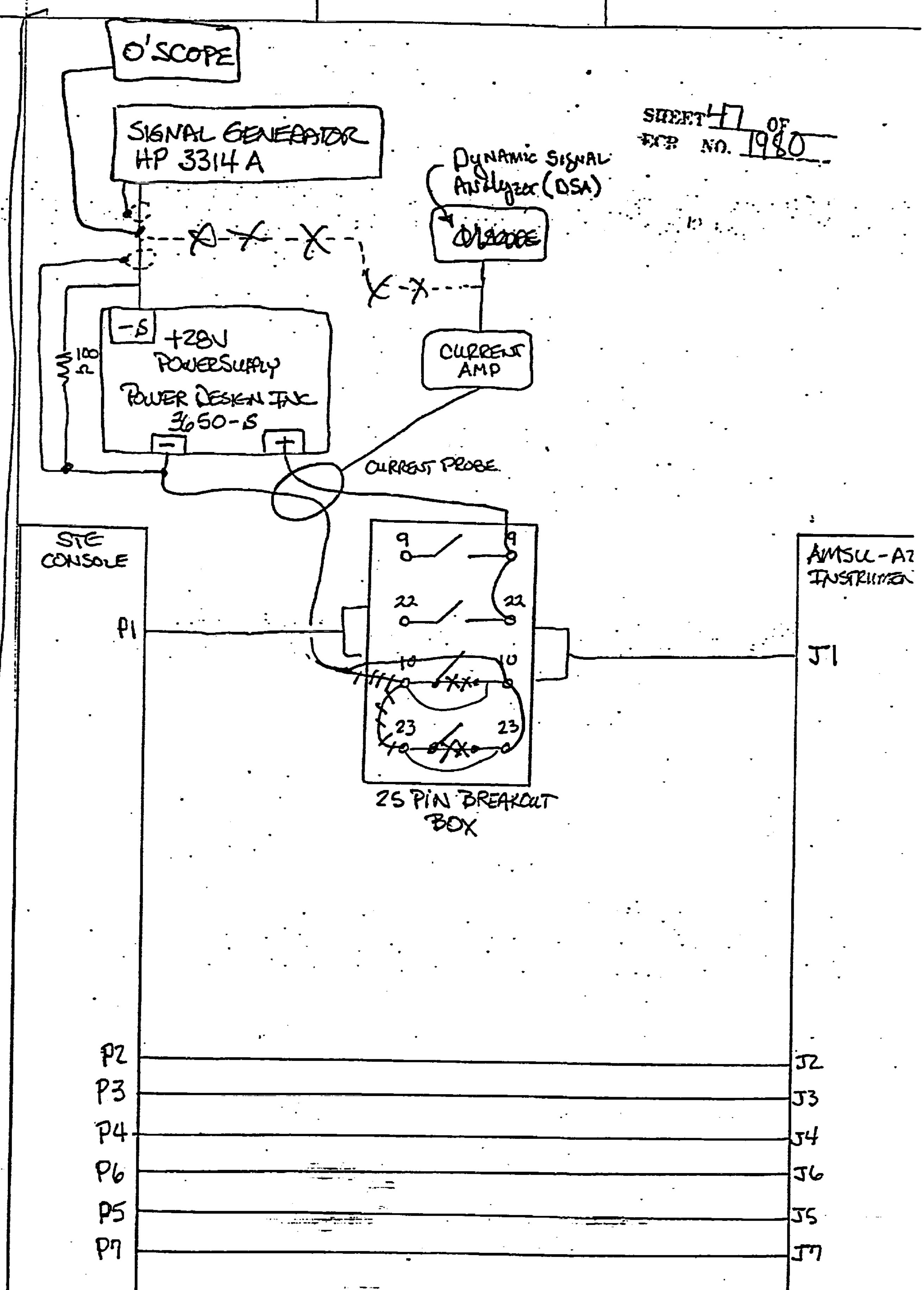

FIGURE 10A

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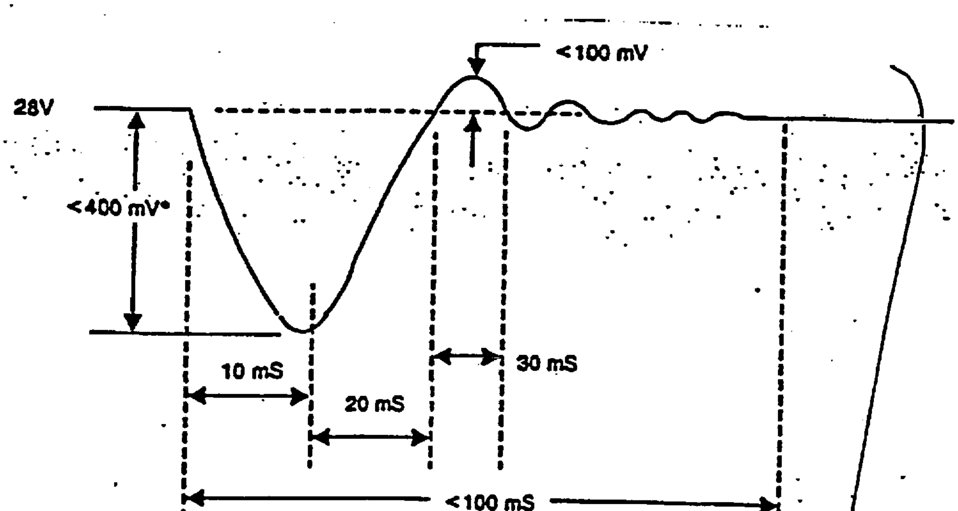
3.2.4.2.3.3.1 Equipment Setup

Setup the test equipment and connect to the instrument as shown in Figure 10A (exceptions: remove the current probe and amplifier; connect the o'scope to monitor the output of the signal generator).

3.2.4.2.3.3.2 Low Frequency Load Induced Transient Test

The AMSU instrument shall be capable of normal operation during and after positive and negative transients are injected into the power line at the amplitude and duration specified in Figure 10B. Perform the Low Frequency Load Induced Transients as follows:

a. With the exception of the external power supply, turn ON all the test equipment.
b. Place the Signal Generator in <u>ARB 0</u> mode. With the external power supply OFF, while monitoring the o'scope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 10B.
c. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
d. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
e. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21. Attach printouts to TDS 41.
f. Connect the signal generator to the external power supply. Wait for the instrument to complete 3 scans. Remove the signal generator output to the power supply.
g. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21. Attach printouts to TDS 41.
j. Record any deviations in the functional performance of the AMSU instrument on TDS 41.



* Typical transients occurring a number of times per orbit are on the order of 200 mV zero-to-peak for a 1.5A load change.

Figure ~~23~~ 10B. Load Induced Transient (Main Bus)

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3.2.4.2.1.3.2.2 **High Frequency Load Induced Transients**

The AMSU instrument shall be capable of normal operation during and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the o'scope are:

Frequency (Hz)	Amplitude
1.43	200 mvpp
2.86	1.00 vpp
6.67	1.50 vpp

Perform the High Frequency Load Induced Transients as follows:

a. With the exception of the external power supply, turn ON all the test equipment.
b. With the external power supply OFF, while monitoring the o'scope, adjust the amplitude and frequency output of the signal generator output as follows:

amplitude	200mvpp
offset	0.000V
frequency	1.430Hz

c. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
d. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
e. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
f. Connect the signal generator to the external power supply. Wait for the instrument to complete 3 scans. Remove the signal generator output to the power supply.
g. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
h. Adjust the signal generator frequency to 2.86Hz; adjust the signal generator amplitude to read 1.00vpp. Reconnect the signal generator to the power supply.
i. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
j. Adjust the signal generator frequency to 6.676Hz; adjust the signal generator amplitude to read 1.50vpp. Reconnect the signal generator to the power supply.
k. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 18 thru 21.
l. Disconnect the signal generator from the power supply.
m. Record any deviations in the functional performance of the AMSU instrument on TDS 41.

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3.2.4.2.4 10VDC Interface Bus Test

3.2.4.2.4.1 Operating Power Measurements

The purpose of this test is to calculate the operating power of the +10VDC Interface Bus from measurements taken of the bus voltage and current.

1. Configure the instrument as shown in Figure 11.
2. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5
3. Measure the bus current and voltage, and record on TDS 6
4. From the measurements recorded on TDS 6, calculate the operating power for the telemetry bus and record on TDS 6

3.2.4.2.4.2 Instrument Feedback Test

The instrument feedback test contained in the following paragraphs will be performed on the +10VDC Interface Bus power line. The peak to peak ripple current shall not exceed 1ma; in addition, the frequency of the ripple shall not exceed 2.5MHz.

3.2.4.2.4.2.1 28VDC Analog Telemetry Bus Ripple Current Measurement

a) Connect the instrument and test equipment as shown in Figure 11A.

b) Set up the DSA as shown below:

Select **MEAS MODE**
- Select *Time Capture*
- Select *Capture Select*
- Select *Capture Length*; Enter 8.0; Select *Sec*

Select **FREQ**
- Select E SMPL *Off*
- Select *Time Length*; Enter 8.0; Select *Sec*

Select **SELECT MEAS**
- Select *Power Spec*
- Select *CH1 Active*

Select **WINDOW**
- Select *Hann*

Select **SOURCE**
- Select Source *Off*

Select **AVG**
- Select Avg *Off*
- Select Tim Av *Off*

Select **RANGE**
- Select *Chan 1 Range*; Enter 1; Select *V*

Select **INPUT COUPLE**
- Select CH1 *DC*
- Select CH 1*Ground*

Select **INPUT TRIG**
- Select *Free Run*

Select **TRIG DELAY**
- Enter 0.0; Select *uSec*

Select **COORD**
- Select *Real*

Select **VIEW INPUT**
- Select *Time Buff*

Select **SCALE**
- Select *X Fixd Scale*; Enter 0.0,8.0; Select *Sec*
- Select *Y Fixd Scale*; Enter 0,1; Select *V*

Select **UNITS**
- Select *Hz (sec)*

c) Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5

d) Acquire 8 seconds of data by depressing Start Capture

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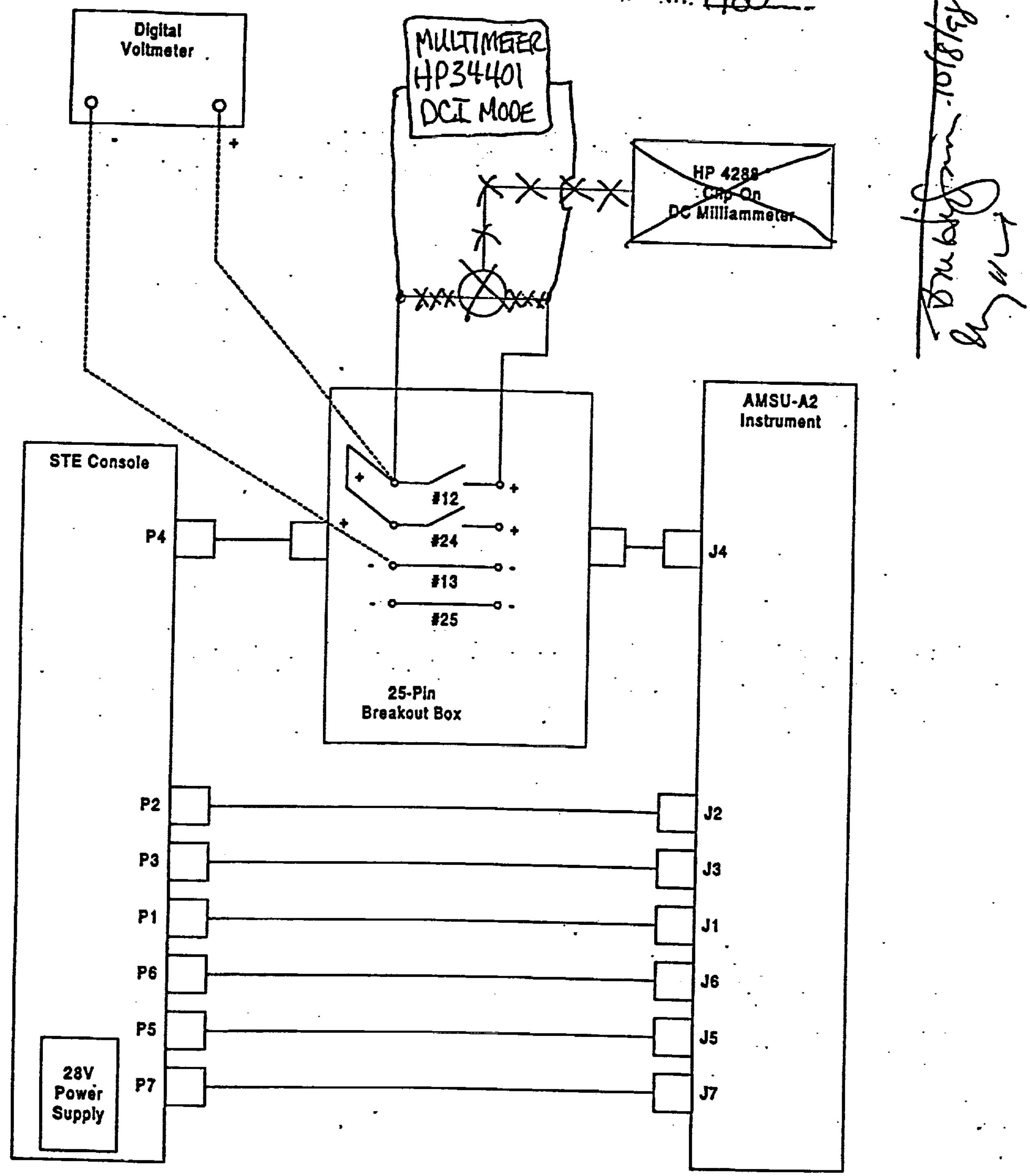

* Inline current meter (Fluke 77) can be used.

Figure 11. +10V Interface Bus Test Setup

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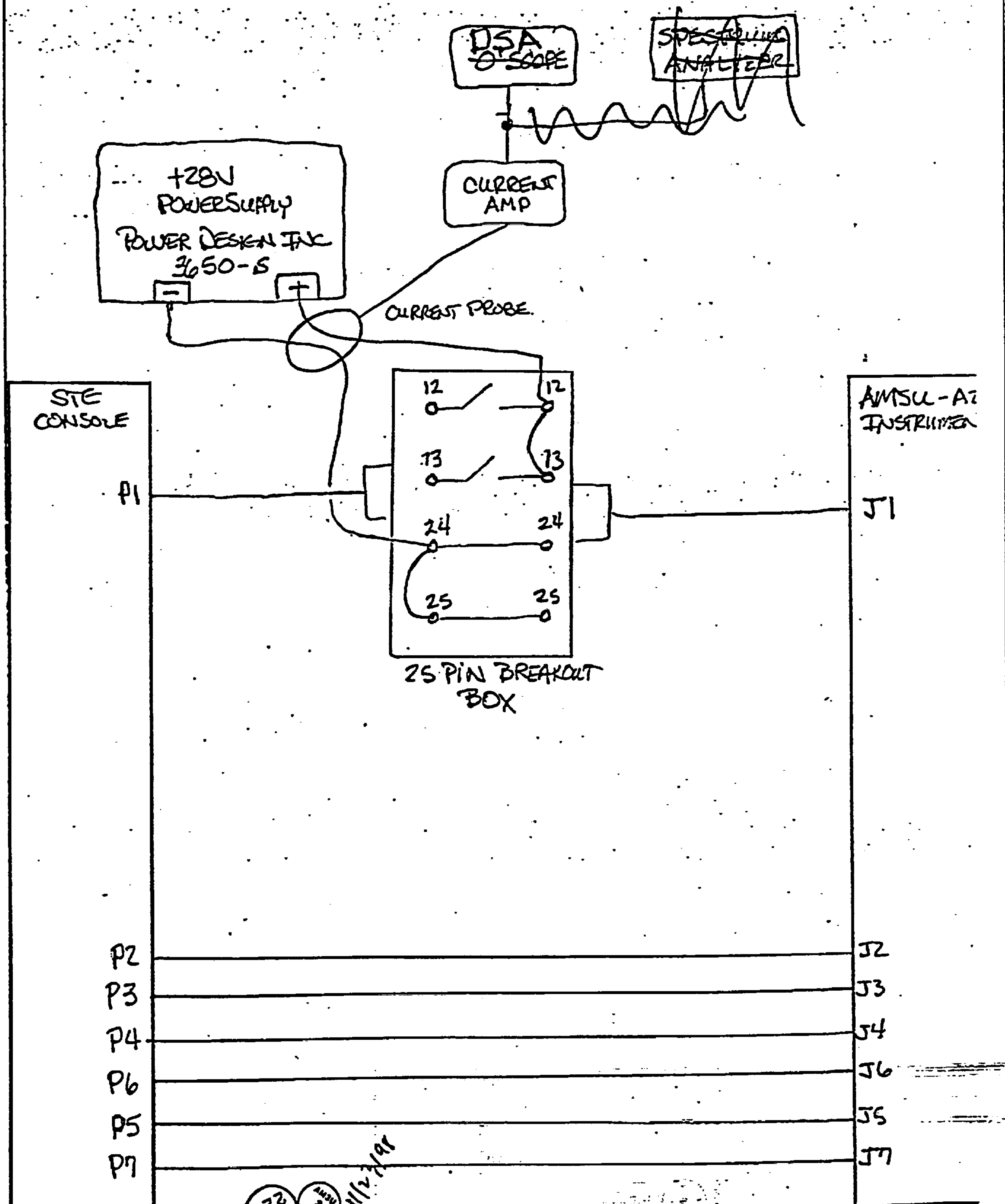

FIGURE 11A

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~~4. Calculate power and record on TDS 6.~~

~~5. Turn the unit OFF by executing command [11] MODULE TOTALLY OFF.~~

3.2.4.2.5 ***Power input test for LPT.*** For LPT, test the power input as follows:

1. Configure the unit and test equipment as indicated in Figure 12.
2. Turn the unit ON as described in 3.2.3.5.

NOTE

Do not proceed without successful completion of step 2.

3. Adjust the STE power supply such that the voltmeter across J1-1 and J1-3 reads +28.0 ± 0.5 V. Record t voltage across the pin J1-1 and J1-3 and record the current at STE power supply on TDS B-1, Appendix (LPT).
4. Turn off power by referring to 3.2.3.6.

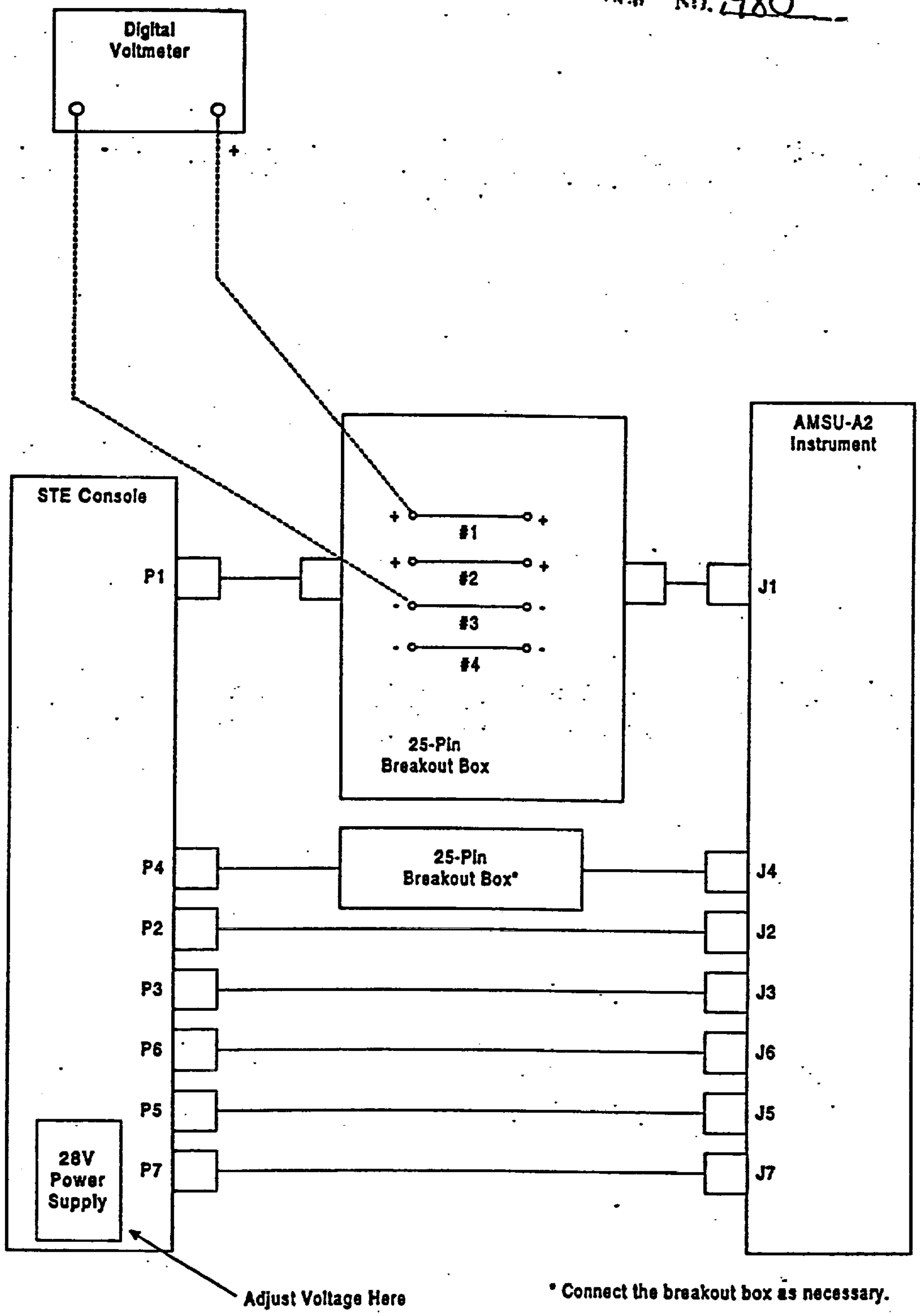

Figure 12. +28 V Main Load Bus Test Setup (For LPT Only)

3.2.4.3 *Clock, commands, and data system test.* This procedure verifies the clock signal, the commands, and the da requirements specified in S-480-80, GIIS IS-3267415, and UIIS IS-2624483.

3.2.4.3.1 *Test sequence.* The test sequence shall be as follows:

a. Clock signals verification

b. Commands and Digital-B telemetry verification

c. Data output verification

- Digital-A
- Analog telemetry
- Test points

d. GSE modes.

3.2.4.3.2 *Clock signals test.* The following items shall be tested to verify the clock signals. Refer to Figures 13 and 14 f graphical representation of these pulses.

a. 1.248 MHz clock

b. 8 seconds frame pulse

c. A1 select pulse

d. C1 shift pulse

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3.2.4.3.2.1 *1.248 MHz synchronization clock.* Perform the following procedures.

1. Configure the unit and the test equipment as indicated in Figure 15.

2. Connect CHANNEL-1 of the oscilloscope to the 1.248 MHz clock signal at the STE output (instru INPUT) as shown in Figure 15.

3. Turn the unit ON as described in 3.2.3.5.

NOTE

Do not proceed without successful completion of step 3.

4. Using the oscilloscope, measure the 1.248 MHz clock signal. Record the data and attach the photograph plot on TDS 7.

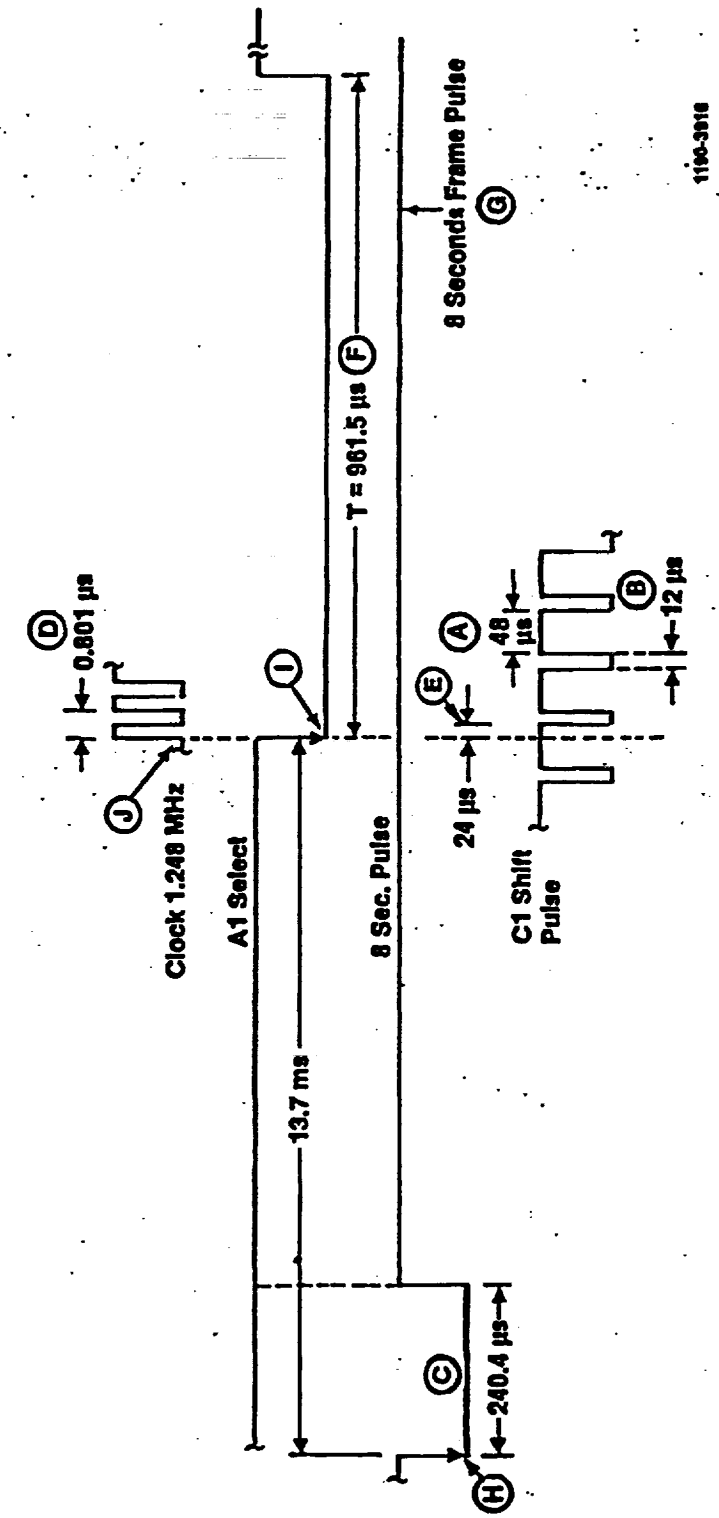

Figure 13. Clock Pulses Timing and Synchronization

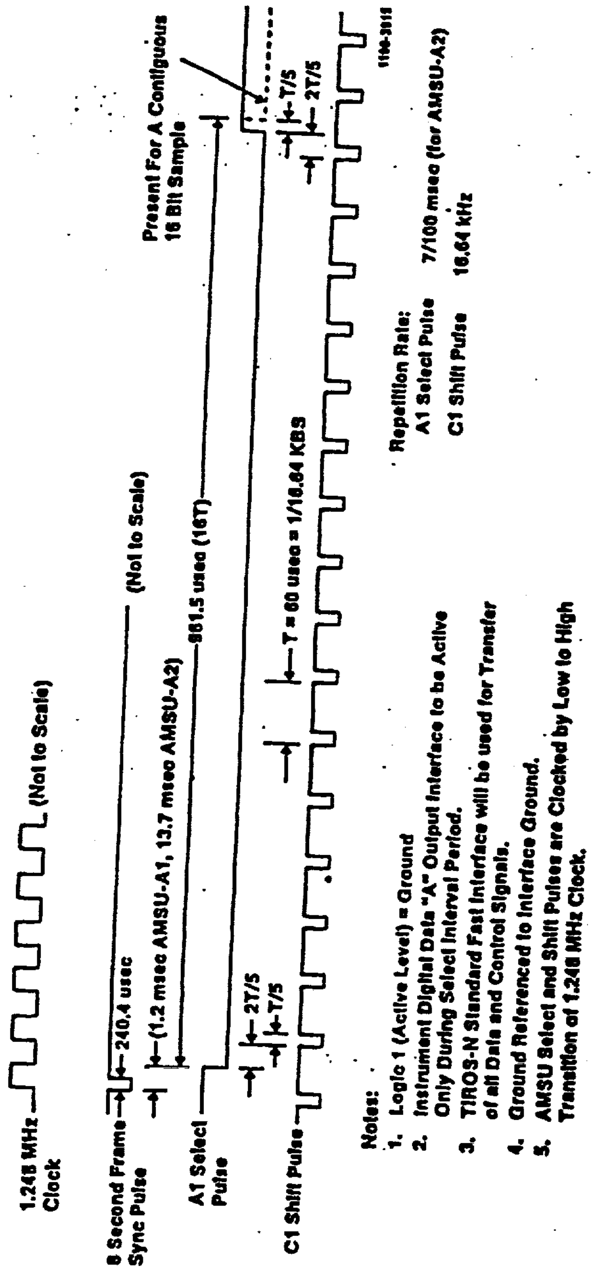

Figure 14. Synchronization Interface Signals

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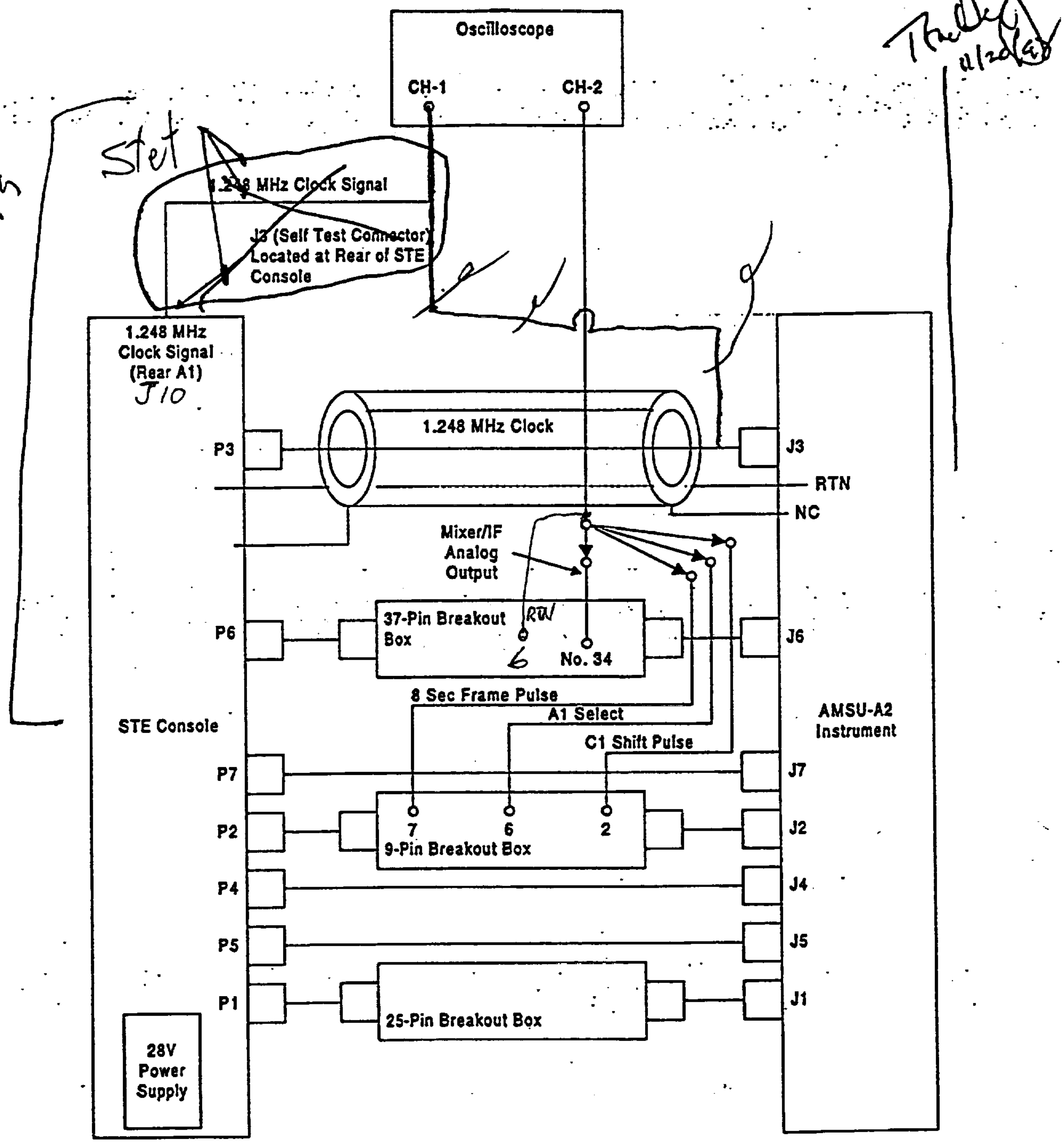

Figure 15. Clock Signal and DC/DC Converter Synchronization Test Setup

3.2.4.3.2.2 *C1 shift pulse verification*. Connect CHANNEL-2 of the oscilloscope to Pin 2 of the 9-pin breakout box (P2 J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 8.

3.2.4.3.2.3 *A1 select pulse verification*. Connect CHANNEL-2 of the oscilloscope to Pin 6 of the 9-pin breakout box (P2 J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 9.

3.2.4.3.2.4 *8-seconds frame sync pulse verification*. Perform the following procedures.

1. Connect CHANNEL-2 of the oscilloscope to Pin 7 of the 9-pin breakout box (P2-J2). Photograph or plo the oscilloscope display and record the information indicated on TDS 10. Measure pulse repetition timin by using HP5316A Universal counter and record on TDS 10.

2. Turn the unit OFF by executing the softkey command [11] MODULE TOTALLY OFF. Leave bot breakout boxes in place.

3. Turn off power by referring to 3.2.3.6.

3.2.4.3.2.5 *Synchronization signal relationship*. The following synchronization signal relationship shall be verified.

a. A1 select pulse and the 8-second frame sync pulse

b. A1 select pulse and C1 shift pulse

c. A1 select pulse and 1.248 MHz clock.

Relationship of A1 select pulse and the 8-second frame sync pulse:

1. With the unit off, configure the unit and the test equipment as indicated in Figure 16.

2. Connect CHANNEL-1 of the oscilloscope to the breakout box, Pin 7 (8 second frame pulse).

3. Turn the unit ON as described in 3.2.3.5.

NOTE

Do not proceed without successful completion of step 3.

4. Adjust the amplitude and the trigger level of the oscilloscope for best picture.

5. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TD 11, sheet 1.

6. From the photograph or plot, verify the synchronization as described in TDS 11, sheet 1. Record pass (fail.

Relationship of A1 select pulse and C1 shift pulse:

7. Connect CHANNEL-1 of the oscilloscope to the breakout box Pin 2 (C1 shift pulse).

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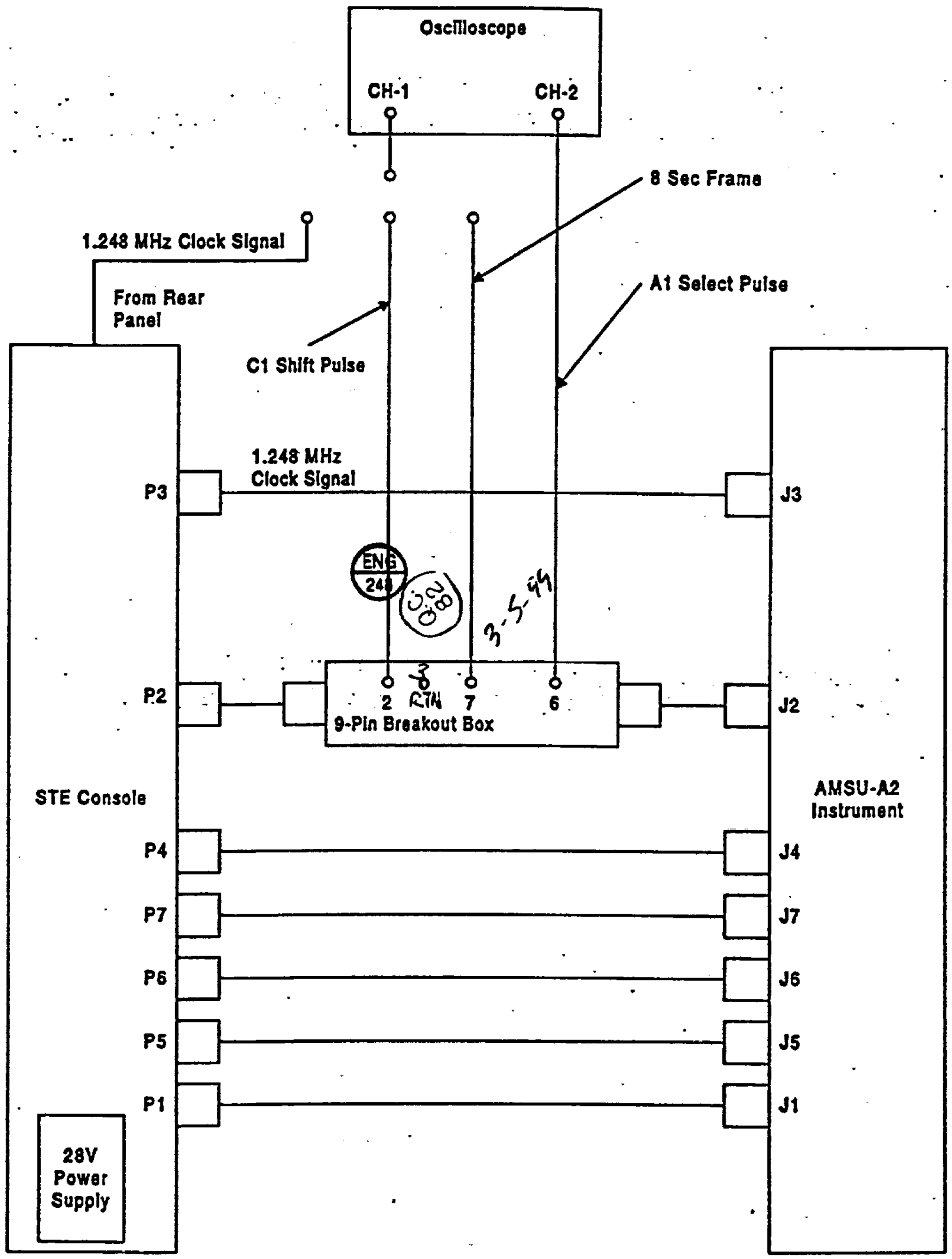

Figure 16. Synchronization Signal Relationships Test Setup

8. Adjust the amplitude and the trigger level of the oscilloscope for best picture.

9. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TI 11, sheet 2.

10. From the photograph or plot, verify the synchronization as described in TDS 11, sheet 2. Record pass fail.

Relationship of A1 select pulse and the 1.248 clock pulse: ENG 248 3/5/44 J10

11. Connect CHANNEL-1 of the oscilloscope to the clock connector located at the rear of the STE (J5 of SEI TEST).

12. Adjust the amplitude and the trigger level of the oscilloscope for best picture.

13. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TI 12.

14. From the photograph or plot, verify the synchronization as described in TDS 12. Record pass or fail.

15. Turn off the instrument by executing command [11] MODULE TOTALLY OFF.

16. Turn off the +28 V STE power supply.

17. Connect unit to STE as shown in Figure 15 without breakout boxes and test equipment.

3.2.4.3.3 *Commands and digital-B telemetry test.* Commands and digital-B telemetry shall be verified in accordance wi the following paragraphs.

3.2.4.3.3.1 *Module totally off.* Commands and digital-B telemetry, with the module totally off, shall be tested as follows:

1. Turn the unit ON as described in 3.2.3.5.

NOTE

Do not proceed without successful completion of step 1.

2. From the Commands Menu, execute command [11] MODULE TOTALLY OFF to OFF mode.

3. Wait at least 18 seconds, then verify that the following events are in effect:

   a. [11] MODULE TOTALLY OFF = OFF

   b. [12] SCANNER A2 POWER = OFF

   c. [10] SURVIVAL HTR POWER = OFF

   d. Antenna reflector pointing toward the warm load.

4. Record the above observations on TDS 13 (Appendix B, TDS B-2 for LPT).

3.2.4.3.3.2 *Survival heater power ON/OFF command.* The survival heater power ON/OFF command shall be tested follows:

1. Execute command [10] SURVIVAL HEATER POWER to ON mode.

2. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 13 (Appendix B, TDS B-2 for LPT).

3. Execute command [10] SURVIVAL HEATER to OFF mode.

4. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 13 (Appendix B, TDS B-2 for LPT).

3.2.4.3.3.3 *Module power connect command.* The module power connect command shall be tested as follows:

1. Execute command [9] MODULE POWER to CONNECT mode.

2. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 13 (Appendix B, TDS B-2 for LPT).

3. Verify that the current at the STE power supply is 0.5 to 3.2 Amperes. Record this information on TDS 13 (Appendix B, TDS B-2 for LPT).

3.2.4.3.3.4 *Scanner commands verification.* The scanner commands shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10] SURVIAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12] SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13] COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	NO			
POWER [4] ON				

Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 14 (Appendix B, TDS B-3 for LPT).

2. Execute. [12] SCANNER A2 POWER = OFF
   [13] COMPENSATOR MOTOR POWER = OFF

   Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 15 (Appendix B, TDS B-4 for LPT).

3. Execute. [12] SCANNER A2 POWER = ON
   [13] COMPENSATOR MOTOR POWER = ON

   Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 16 (Appendix B, TDS B-5 for LPT).

3.2.4.3.3.5 *Scanner position commands verification.* Verify scanner position command operation as follows:

1. Execute command [14] ANTENNA WARM CAL POS to YES mode.

2. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 17 (Appendix

B, TDS B-6 for LPT).

3. Execute commands [15] ANTENNA IN COLD CAL POS to YES mode, [18] COLD CAL POSITIO MSB to 0, and [19] COLD CAL POSITION LSB to 1.

4. Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 1 (Appendix B, TDS B-6 for LPT).

5. Execute commands [18] COLD CAL POSITION MSB to 1 and [19] COLD CAL POSITION LSB to 0.

6. Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 1 (Appendix B, TDS B-6 for LPT).

7. Execute commands [18] COLD CAL POSITION MSB to 1 and [19] COLD CAL POSITION LSB to 1.

8. Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 1 (Appendix B, TDS B-6 for LPT).

9. Execute commands [18] COLD CAL POSITION MSB to 0 and [19] COLD CAL POSITION LSB to 0.

10. Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 1 (Appendix B, TDS B-6 for LPT).

11. Execute command [16] ANTENNA IN NADIR POSITION to YES mode.

12. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 17 (Appendi B, TDS B-6 for LPT).

13. Execute command [14] ANTENNA WARM CAL POS to YES mode.

14. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 17 (Appendi B, TDS B-6 for LPT).

3.2.4.3.4 *Digital-A data output test*. The following items shall be tested to verify the digital-A data output:

a. Full scan (3.2.4.3.4.1)

b. Warm load (3.2.4.3.4.2)

c. Cold cal (3.2.4.3.4.3)

d. Nadir (3.2.4.3.4.4).

For each of the above scan modes, the following parameters will be subject to pass/fail criterion:

[I] Sync. sequence

[II] Unit I.D. and serial number

[III] Digital B serial data verification

[IV] Reflector positions

[V] Radiometric data (scene data)

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[VI] Temperature sensors.

For the cold cal mode, reflector position [IV] shall be tested for the following conditions.

(a) Cold cal position with MSB=1 and LSB=0

(b) Cold cal position with MSB=0 and LSB=1

(c) Cold cal position with MSB=1 and LSB=1.

3.2.4.3.4.1 *Full scan mode.* The digital-A data output in full-scan mode shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10]	SURVIAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12]	SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13]	COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14]	ANTENNA WARM CAL POS =	NO			
POWER [4]: ON					

2. Obtain a full printout of all the parameters ([I] through [VI]) described above, by typing PRINT [3] FULL.

3. Attach the printout to TDS 18 (Appendix B, TDS B-7 for LPT).

[I], [II], and [III] Sync, Unit ID, and Digital-B Data:

4. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 18 (Appendix B, TDS B-7 for LPT). Record pass or fail.

[IV] Reflector position:

5. Using STE procedure AE-26157; select reflector position screen, execute PRINT [2] SCREEN ONLY, and attach the data to TDS 19 (Appendix B, TDS B-8 for LPT). Verify that there is no "E" error on computer printout. Record pass or fail on TDS 19 (Appendix B, TDS B-8 for LPT).

[V] Radiometric data:

6. Using STE procedure AE-26157, select Radiometric data for CH-1 and CH-2. PRINT SINGLE [2] PAGES for each channel. From the data obtained, verify that the data are within the values specified on TDS 20. Attach the data for each channel to TDS 20 (Appendix B, TDS B-9 for LPT). Record pass or fail.

[VI] Temperature sensors:

7. Using STE procedure AE-26157, select DIG-A temperature sensor screen and PRINT SINGLE [2] PAGE. From the data obtained, verify that the values are within the specified limits on TDS 21 (Appendix B, TDS B-10 for LPT). Attach the data to TDS 21 (Appendix B, TDS B-10 for LPT). Record pass or fail.

3.2.4.3.4.2 *Warm cal mode.* The digital-A data output, in warm-cal mode shall be tested as follows:

1. Execute command [14] ANTENNA WARM CAL POS and verify command display is as follows:

[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15
[10] SURVIAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17
[12] SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [18
[13] COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO [19
[14] ANTENNA WARM CAL POS =	YES		
POWER [4] ON			

2. Obtain a full printout of all the parameters ([I] through [VII]) described above, by touching the PRINT [FULL touch area.

3. Attach the printout to TDS 22.

[I], [II], and [III] Sync, Unit ID, and Digital-B Data:

4. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required valu specified in TDS 22. Record pass or fail.

[IV] Reflector position:

5. Using STE procedure AE-26157; select reflector position screen, execute PRINT [2] SCREEN ONLY, a attach the data to TDS 23. Verify that there is no "E" error on computer printout. Record pass or fail TDS 23.

[V] Radiometric data:

6. Using STE procedure AE-26157, select Radiometric data for channel 1 and channel 2. PRINT [2] SINGL PAGES for each channel. From the data obtained, verify that the data are within the values specified TDS 24. Attach the data for each channel to TDS 24. Record pass or fail.

[VI] Temperature sensors:

7. Using STE procedure AE-26157, select DIG-A temperature sensor screen and PRINT SINGLE [2] PAG From the data obtained, verify that the values are within the specified limits on TDS 25. Attach the data TDS 25. Record pass or fail.

3.2.4.3.4.3 *Cold cal mode.* The digital-A data output, in cold-cal mode, shall be tested as follows:

1. Execute command [15] ANTENNA IN COLD CAL POS and verify command display is as follows:

[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	YES [15
[10] SURVIAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17
[12] SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [18
[13] COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO [19
[14] ANTENNA WARM CAL POS =	NO		
POWER [4] ON			

2. Obtain a full printout of all the parameters ([I] through [VII]) described above, by touching the PRINT FULL touch area.

3. Attach the printout to TDS 26.

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[I], [II], and [III] Sync, Unit ID, and Digital-B Data:

4. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 26. Record pass or fail.

[IV] Reflector position:

5. To test the cold cal reflector position, perform the following substeps:

(a) Using STE procedure AE-26157; select reflector position screen, execute PRINT [2] SCREEN ONLY, and attach the data to TDS 23. Verify that there is no "E" error on computer printout. Record pass or fail on TDS 23.

(b) Execute commands [18] COLD CAL POSITION MSB to 0 and [19] COLD CAL POSITION LSB to 1. Repeat substep a. then proceed to substep c.

(c) Execute commands [18] COLD CAL POSITION MSB to 1 and [19] COLD CAL POSITION LSB to 0. Repeat substep a., then proceed to substep d.

(d) Execute commands [18] COLD CAL POSITION MSB to 1 and [19] COLD CAL POSITION LSB to 1. Repeat substep a., then proceed to substep e.

(e) Execute commands [18] COLD CAL POSITION MSB to 0 and [19] COLD CAL POSITION LSB to 0.

[V] Radiometric data:

6. Using STE procedure AE-26157, select Radiometric data for channel 1 and channel 2. PRINT [2] SINGLE PAGES for each channel. From the data obtained, verify that the data are within the values specified on TDS 27. Attach the data for each channel to TDS 27. Record pass or fail.

[VI] Temperature sensors:

7. Using STE procedure AE-26157, select DIG-A temperature sensor screen and PRINT SINGLE [2] PAGE. From the data obtained, verify that the values are within the specified limits on TDS 28. Attach the data to TDS 28. Record pass or fail.

3.2.4.3.4.4 *Nadir cal mode.* The digital-A data output, in nadir-cal mode, shall be tested as follows:

1. Execute command [16] ANTENNA IN NADIR POS and verify command display is as follows:

[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10] SURVIAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	YES	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO	[17]
[12] SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13] COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	NO			
POWER [4] ON				

2. Obtain a full printout of all the parameters ([I] through [VI]) described above, by touching the PRINT [3] FULL touch area.

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3. Attach the printout to TDS 29.

[I], [II], and [III] Sync, Unit ID, and Digital-B Data:

4. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required valu specified in TDS 29. Record pass or fail.

[IV] Reflector position:

5. Using STE procedure AE-26157; select reflector position screen, execute "PRINT [2] SCREEN ONLY and attach the data to TDS 23. Verify that there is no "E" error on the computer printout. Record pass fail on TDS 23.

[V] Radiometric data:

6. Using STE procedure AE-26157, select Radiometric data for channel 1 and channel 2. "PRINT [SINGLE PAGES" for each channel. From the data obtained, verify that the data are within the valu specified on TDS 30. Attach the data for each channel to TDS 30. Record pass or fail.

[VI] Temperature sensors:

7. Using STE procedure AE-26157, select DIG-A temperature sensor screen and "PRINT SINGLE [PAGE". From the data obtained, verify that the values are within the specified limits on TDS 31. Atta the data to TDS 31. Record pass or fail.

3.2.4.3.5 *Analog telemetry test.* The purpose of this test is to verify that the 26 analog telemetry signals are with requirements. The purpose of the analog telemetry signals is to provide information about the functionality of the subsyster during normal operation of the unit. The analog telemetry signals shall be verified in two ways: (1) by measuring the anal telemetry signals directly at the interfacing connector and (2) by use of the STE.

3.2.4.3.5.1 *Analog TLM signals measurements connector J6.* Measure analog TLM signals at connector J6 as follows:

1. Configure the unit and the STE as indicated in Figure 17. Verify that unit power is off prior to t installation of the breakout boxes. To turn the unit off, select the Commands Menu and execute comma "[11] MODULE TOTALLY OFF". Manually turn off the STE 28V power supply located inside the S console.

2. Turn the unit on as follows:

   (a) Turn on the STE 28V power supply.

   (b) Execute commands as necessary to achieve the following configuration:

[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15
[10]	SURVIAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17
[12]	SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18
[13]	COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19
[14]	ANTENNA WARM CAL POS =	NO			
POWER [4] ON					

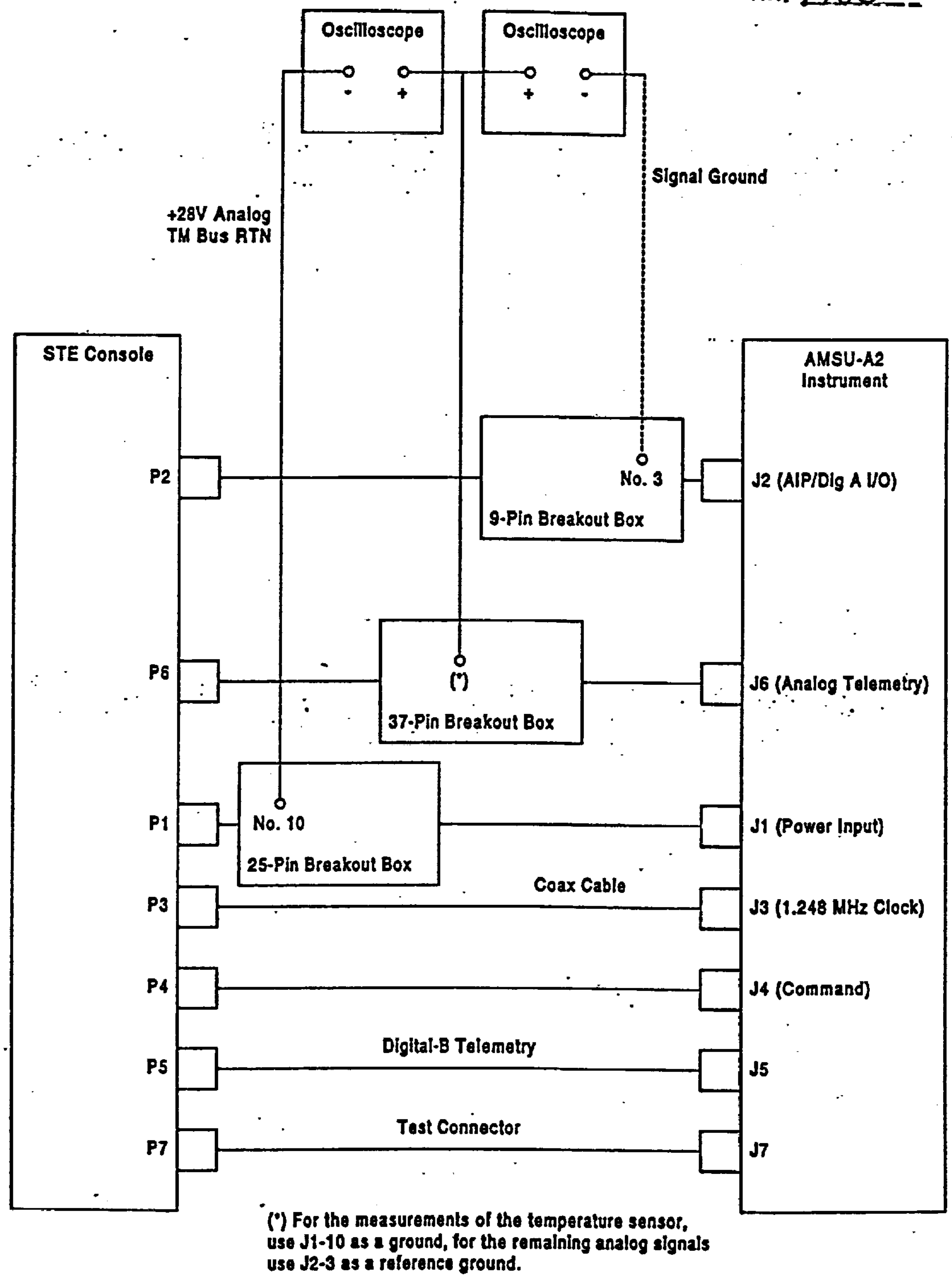

Figure 17. Analog Telemetry Signal Verification Test Setup

3. Using the "28V Analog Telemetry Bus Return" (J1-10) as a reference ground, measure and record the fo temperature sensor voltages in the order specified on TDS 32.

4. Using the "Signal Ground" (J2-03) as a reference ground, measure and record the remaining analc telemetry voltage levels in the order specified on TDS 32.

5. Leave the unit on in preparation for the next test.

3.2.4.3.5.2 *Analog TLM signal measurements using the STE.* Analog TLM signal measurements using the STE shall b taken as follows:

1. Using STE procedure AE-26157, select Analog TLM screen and execute command "PRINT [2] SCREE ONLY". Obtain printout and verify that the data matches the values specified on TDS 33 (Appendix B TDS B-11 for LPT). Record pass or fail.

2. Attach computer printout to TDS 33 (Appendix B, TDS B-11 for LPT).

3. Power off unit by referring to 3.2.3.6.

3.2.4.3.6 *Test point test.* The purpose of this test is to verify the performance of the integrator and its associated cloc pulses. Figure 2 shows the integration waveform and the clock signals. Test point verification consists of the followin parameters:

a. Integration/Hold and Dump Clock Signals. (3.2.4.3.6.1)
(Time and amplitude)

b. Integration Time (Analog Output). (3.2.4.3.6.2)
(Time and amplitude)

3.2.4.3.6.1 *Integration/hold and dump clock signals.* The integration/hold and dump clock signals shall be tested a follows:

1. Referring to Figure 18, configure the oscilloscope as follows:

   (a) Channel-1 to J7-23 integration/hold clock signal (J7-26 RTN).

   (b) Channel-2 to J7-6 dump signal clock (J7-26 RTN).

   (c) Internal trigger mode to channel-1.

   (d) Amplitude and Time optimized for best resolution.

2. Power on unit by referring to 3.2.3.5.

3. Photograph or plot the oscilloscope display and attach the photograph or plot to TDS 34.

4. From the photograph or plot, measure time and amplitude for the integrate/hold and dump clock signals. Verify that the data obtained are within the requirements specified on TDS 34 and Figure 2.

5. Leave the equipment in place and the unit turned on in preparation for the next test.

3.2.4.3.6.2 *Integration time (analog outputs).* The analog outputs integration time shall be tested as follows:

1. Reconfigure the test equipment as indicated in Figure 19.

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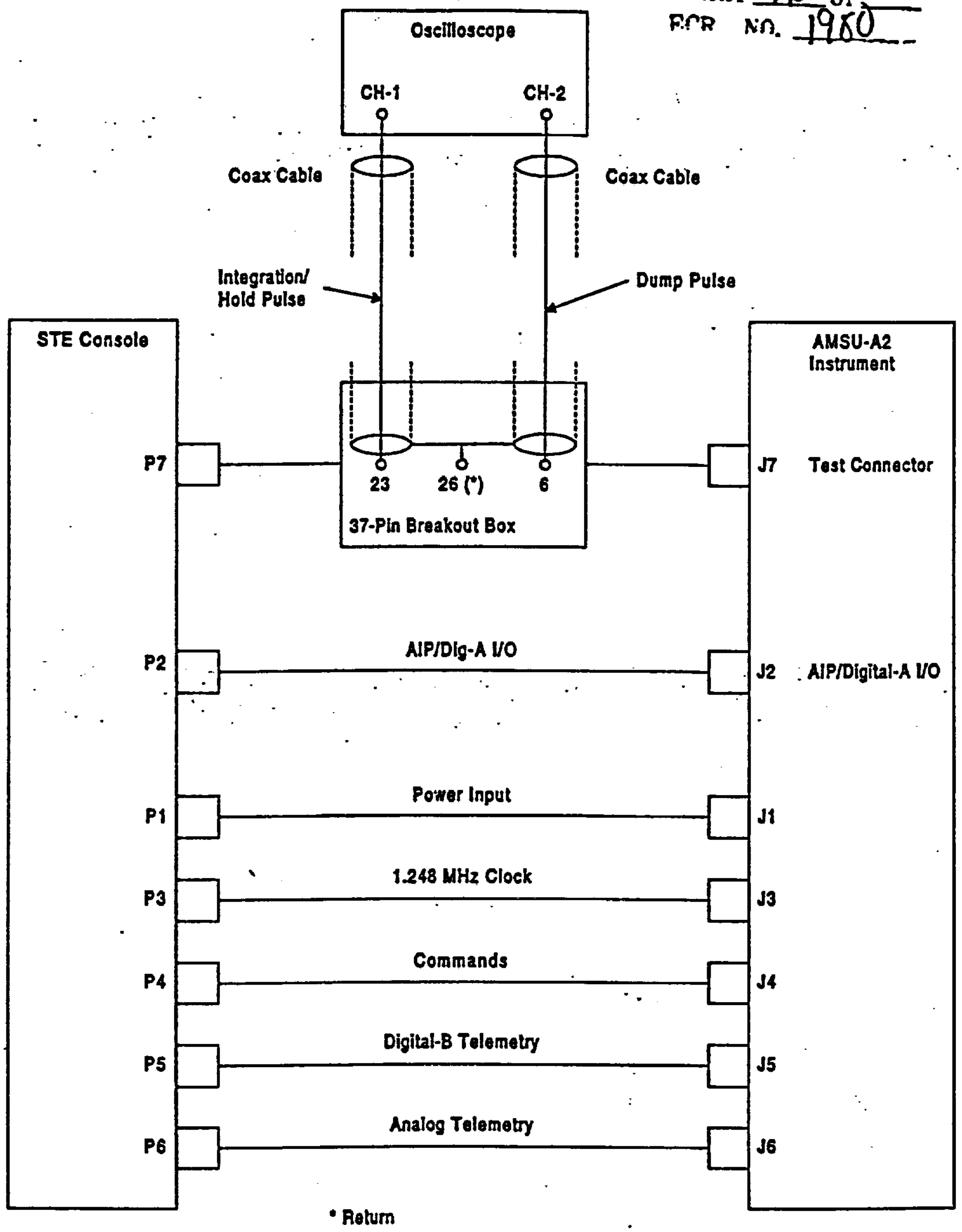

Figure 18. Integration/Hold and Dump Signals Verification Test Setup

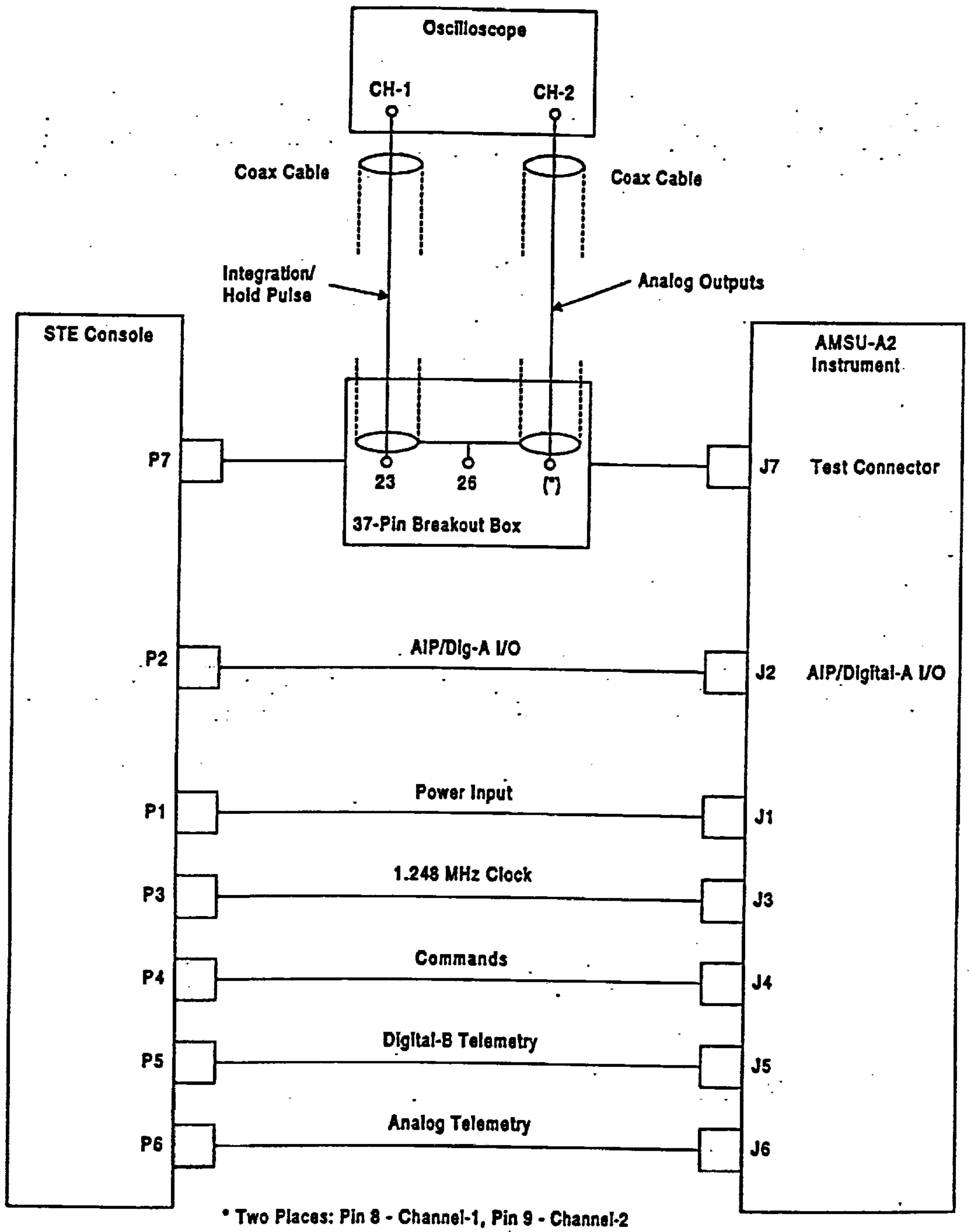

Figure 19. Integration Time (Analog Output) Verification Setup

2. Connect the oscilloscope, channel-2 positive line to J7-8 of the 37-pin breakout box. Keep channel-1 of the oscilloscope connected to J7-23 and J7-26 (RTN).

3. Adjust the oscilloscope for best amplitude and time resolution. The displayed signals should look like Figure 2.

4. Photograph or plot the display and attach it to TDS 35.

5. From the photograph or plot, measure the integration time and the amplitude. Verify that the data obtained is within the requirements specified in TDS 35.

6. Connect the oscilloscope to the analog signal for channel-2 (J7-9) and repeat steps 2 through 5.

7. Leave the unit turned on and the test equipment in place in preparation for the next test.

3.2.4.3.7 *GSE mode test*. The purpose of this test is to verify the data obtained from the Ground Support Equipment (GSE).

NOTE

The GSE mode test is not required and is for engineering use only.

The following modes shall be evaluated.

GSE-1 (Position: 10, 10, 10)

GSE-2 (Position: 1, 30 readings)

GSE-3 (Position: current, 30 readings)

GSE-4 (Position: 30, 30 readings)

GSE-5 (Position: 6, 30 readings)

GSE-7 (Position: required, 30 readings)

For GSE mode-1 the following parameters are subject to pass or fail criterion:

[I] Sync. sequence

[II] Unit ID and serial number

[III] Digital B serial data verification

[IV] Reflector positions

[V] Radiometric data (Scene data for channel-1 only)

[VI] Temperature sensors.

For GSE 2 through 7, only the following parameters are subject to pass or fail criterion:

[IV] Reflector position.

3.2.4.3.7.1 *Equipment preparation*. To place instrument in GSE mode, proceed as follows:

a. On Commands Menu, press: RETURN [1].

b. On Main Menu, select: [10] SELF TEST.

c. On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: "ENTER GSE MODE (0 to 15)".)

d. Enter corresponding GSE mode under test.

3.2.4.3.7.2 *GSE Mode-1.* The GSE mode-1 shall be tested as follows:

[I], [II], and [III] Sync, Unit ID, and Digital B:

1. Place instrument in GSE mode-1 and obtain full printout. Using the printout, verify that elements 1 throu 8 are within the values specified on TDS 36. Record pass or fail.

[IV] Reflector Positions:

2. Using STE procedure AE-26157, select reflector position screen and execute "PRINT [2] SCREE ONLY" to obtain a printout of data. Verify that there is no "E" error on computer printout. Record pass fail on TDS 37. Attach printout to TDS 37.

[V] Radiometric Data:

3. Using STE procedure AE-26157, select radiometric data screen for channel-1 and channel-2. Obtain single page printout for each channel. Verify that the radiometric data is within the required valu specified on TDS 38. Attach printout to TDS 38.

[VI] Temperature Sensors:

4. Using STE procedure AE-26157, select DIG-A temp. sensor data screen and execute "PRINT [2] SCREE ONLY" to obtain a printout of the page. Verify that the temperature data are within the required valu specified on TDS 39. Record pass or fail on TDS 39. Attach printout to TDS 39.

3.2.4.3.7.3 *GSE Mode-2*. The GSE Mode-2 shall be tested as follows:

1. Place unit in GSE Mode-2 as follows:

   (a) On Commands Menu, press: RETURN [1].

   (b) On Main Menu, select: [10] SELF TEST.

   (c) On Self Test Menu, select: [7] RUN GSE MODE.
   (The computer will prompt: "ENTER GSE MODE (0 to 15)".)

   (d) Enter GSE MODE [2] at the prompt.

[IV] Reflector Positions:

2. Using STE procedure AE-26157, select reflector position screen and execute "PRINT [2] SCREE ONLY" to obtain a printout of data. Verify that the reflector positions are within the required valu specified on document AE-26002/2. Record pass or fail on TDS 37. Attach printout to TDS 37.

3.2.4.3.7.4 *GSE Mode-3*. The GSE Mode-3 shall be tested as follows:

1. Place unit in GSE Mode-3 as follows:

   (a) On Commands Menu, press: RETURN [1].

   (b) On Main Menu, select: [10] SELF TEST.

   (c) On Self Test Menu, select: [7] RUN GSE MODE.
   (The computer will prompt: "ENTER GSE MODE (0 to 15)".)

   (d) Enter GSE MODE [3] at the prompt.

[IV] Reflector Positions:

2. Using STE procedure AE-26157, select reflector position screen and execute "PRINT [2] SCREEN ONLY" to obtain a printout of data. Verify that there is no "E" error on computer printout. Record pass or fail on TDS 37. Attach printout to TDS 37.

3.2.4.3.7.5 *GSE Mode-4.* The GSE Mode-4 shall be tested as follows:

1. Place unit in GSE Mode-4 as follows:

   (a) On Commands Menu, press: RETURN [1].

   (b) On Main Menu, select: [10] SELF TEST.

   (c) On Self Test Menu, select: [7] RUN GSE MODE.
   (The computer will prompt: "ENTER GSE MODE (0 to 15)".)

   (d) Enter GSE MODE [4] at the prompt.

[IV] Reflector Positions:

2. Using STE procedure AE-26157, select reflector position screen and execute "PRINT [2] SCREEN ONLY" to obtain a printout of data. Verify that there is no "E" error on computer printout. Record pass or fail on TDS 37. Attach printout to TDS 37.

3.2.4.3.7.6 *GSE Mode-5.* The GSE Mode-5 shall be tested as follows:

1. Place unit in GSE Mode-5 as follows:

   (a) On Commands Menu, press: RETURN [1].

   (b) On Main Menu, select: [10] SELF TEST.

   (c) On Self Test Menu, select: [7] RUN GSE MODE.
   (The computer will prompt: "ENTER GSE MODE (0 to 15)".)

   (d) Enter GSE MODE [5] at the prompt.

[IV] Reflector Positions:

2. Using STE procedure AE-26157, select reflector position screen and execute "PRINT [2] SCREEN ONLY" to obtain a printout of data. Verify that there is no "E" error on computer printout. Record pass or fail on TDS 37. Attach printout to TDS 37.

3.2.4.3.7.7 *GSE Mode-7.* The GSE Mode-7 shall be tested as follows:

1. Place unit in GSE Mode-7 as follows:

   (a) On Commands Menu, press: RETURN [1].

   (b) On Main Menu, select: [10] SELF TEST.

   (c) On Self Test Menu, select: [7] RUN GSE MODE.
   (The computer will prompt: "ENTER GSE MODE (0 to 15)".)

   (d) Enter GSE MODE [7] at the prompt.

   (e) Press PRINT [3] FULL. The computer will start printing 4 pages of data.

[IV] Reflector Positions:

2. Using STE procedure AE-26157, select reflector position screen and execute "PRINT [2] SCREE! ONLY" to obtain a printout of data. Verify that there is no "E" error on computer printout. Record pass c fail on TDS 37. Attach printout to TDS 37.

3. Set the STE to GSE MODE-0. Failure to do so will cause the STE to produce faulty data when in norma mode. To enter GSE Mode-0 into the computer, proceed as follows:

   (a) Return to the Main Menu by pressing: RETURN [1].

   (b) On Main Menu, select: [10] SELF TEST.

   (c) On Self Test Menu, select: [7] RUN GSE MODE.
   (The computer will prompt: "ENTER GSE MODE (0 to 15)".)

   (d) Select GSE MODE [0].

3.2.4.4 *Radiometer functional test.* The purpose of this procedure is to verify the performance of the AMSU-A2 radiomete at the system level. This test shall consist of relative NEΔT measurements.

3.2.4.4.1 *Relative radiometer NEΔT measurements.* The purpose of this test is to perform a preliminary evaluation of th radiometer NEΔT at a system level. Since the STE is not in the thermal-vacuum configuration, no temperature readings fror the cold load are available. To compute the NEΔT for this test, the temperature used for the cold load shall be 80 K.

The data obtained from this test are considered as "relative NEΔT" and are to be used as a diagnostic tool to verify prope operation of the A/D converters and the spacecraft interface.

The equation to determine "relative NEΔT" is as follows:

$$GAIN = \frac{Th - Tc}{M - N}$$

$$NE\Delta T = SD \times GAIN$$

where:

SD = Standard deviation of 120 samples at hot temperature
Th = Standard room temperature = deg. K
Tc = Standard LN_2 temperature = 80 K

M = Average of hot counts (120 samples)
N = Average of cold counts (30 samples)

The sequence of testing shall be as follow:

a. Equipment preparation and setup configuration (3.2.4.4.1.1)

b. Relative NEΔT data collection (3.2.4.4.1.2)

3.2.4.4.1.1 *Equipment preparation and setup configuration.* The equipment shall be setup as follows:

WARNING

The use of liquid nitrogen in a confined poorly ventilated area can cause rapid asphyxiation and death due to a lack of oxygen (oxygen concentration below 20 percent). Accidental contact with liquid nitrogen will cause severe frostbite to the eyes or skin. When handling liquid nitrogen, personnel shall observe the following safety precautions:

a. Ensure that the work area is well ventilated to prevent excessive gas buildup.

b. To protect your eyes, always wear a face shield or safety goggles (safety glasses without side shields do not provide adequate protection).

c. To protect exposed skin, always wear a lab coat, gloves made for cryogenic work, cuffless trousers (worn outside the boots or shoes), and safety shoes.

1. Configure the test equipment and the unit as indicated in Figure 20. Connect the instrument to STE as shown in Figure 21 without breakout boxes.

2. Execute commands as necessary to obtain the following configuration:

[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL. POS =	NO	[15]
[10] SURVIAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO	[17]
[12] SCANNER A2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[18]
[13] COMPENSATOR MOTOR POWER =	ON	COLD CAL POSITION LSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	YES			
POWER [4] ON				

3. Allow 30 minutes for the unit to stabilize.

3.2.4.4.1.2 *Relative NEΔT data collection.* Perform the following procedures.

1. Return to the Main Menu by pressing [1] RETURN.

2. On the Main Menu, select [13] FUNCTIONAL TEST. (The STE will automatically command the unit to position the antenna reflector to the warm and cold loads as it is taking data.)

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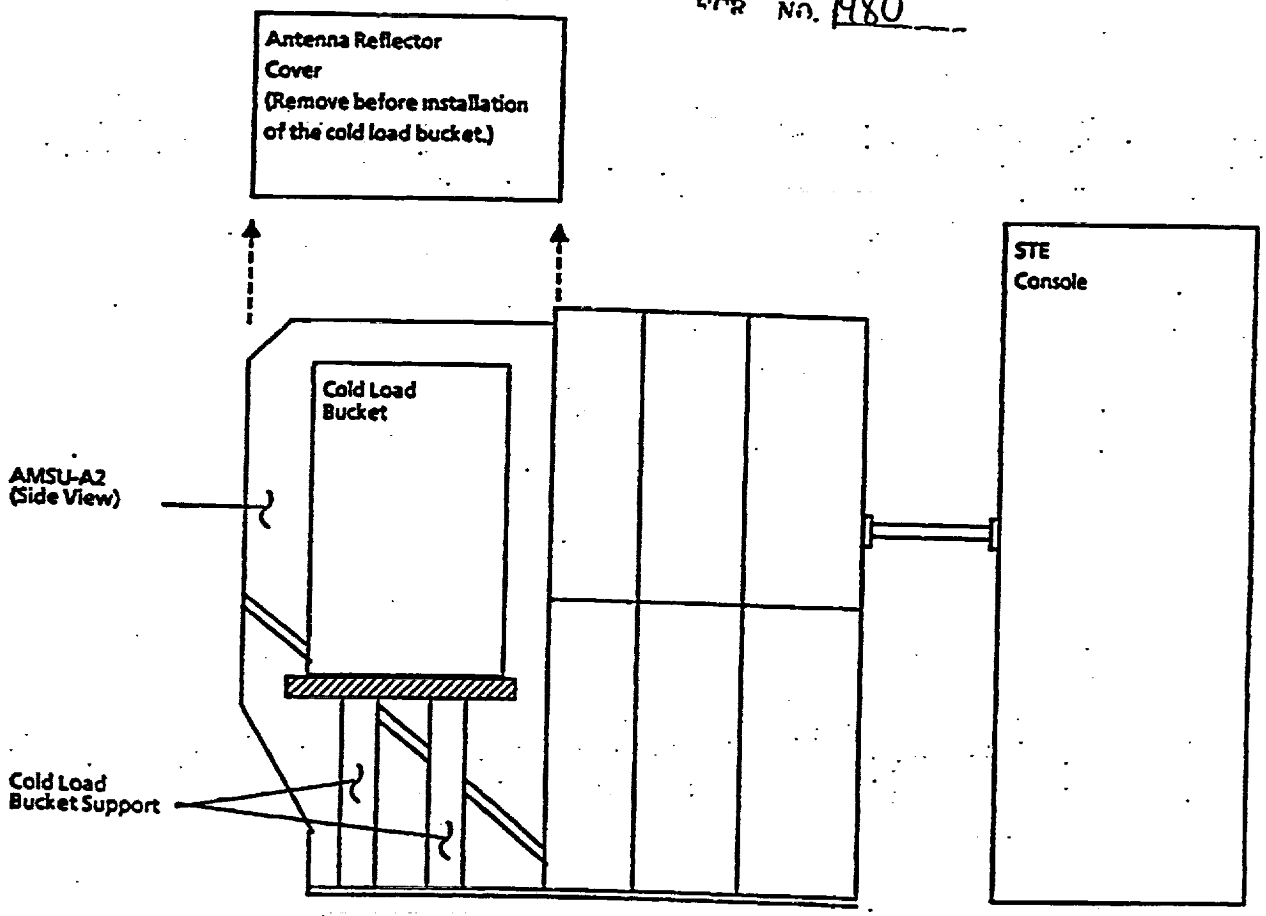

Figure 20. NEΔT Setup Configuration

3. Wait approximately one minute to verify that the NEΔT results are displayed on the screen. Obtain a printout. Repeat step 2 four times and obtain four additional printouts. Average NEΔT from these five data points. Enter the values on TDS 40. Attach the printouts to TDS 40 (Appendix B, TDS B-12 for LPT).

4. Remove the cryogenic loads and associated hardware.

5. Turn off the unit by using command "[11] MODULE TOTALLY OFF". Turn off +28 V power supply at the STE console.

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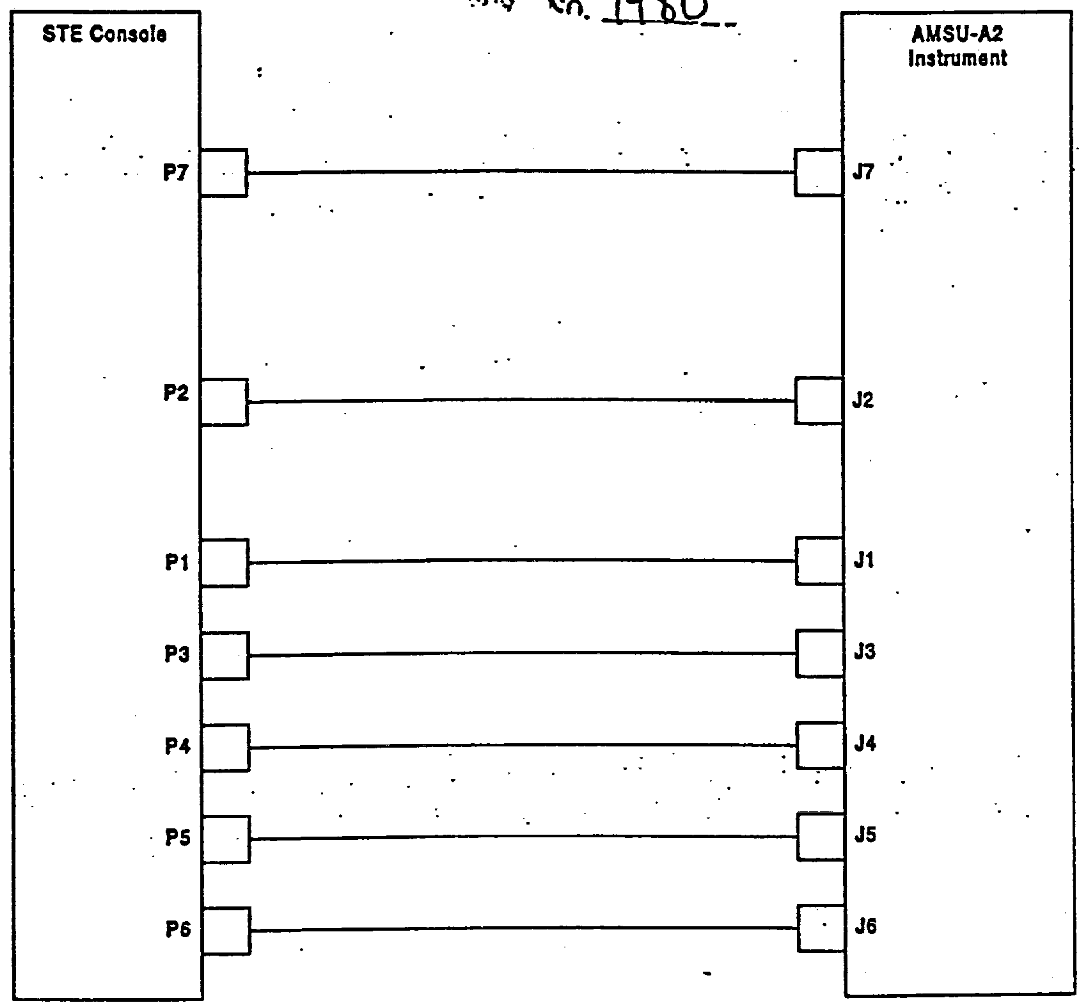

Figure 21. Relative NEΔT Measurement Test Setup

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~~3.2.4.4.2~~ 3.2.4.4.2

Channel identification test. The purpose of the channel identification test is to verify the proper final configuration/assembly of each radiometer channel from antenna input to the spacecraft interface.

1. Configure the unit and test equipment as shown in Figure ~~12~~ ~~8A~~ 22.

NOTE

Use of the 25-pin breakout box is optional for this test.

~~2. Connect the STE to instrument using the following STE interface cables.~~

~~a. STE interface cable J1 (1356648-1)~~

~~b. STE interface cable J2 (1356648-2)~~

~~c. STE interface cable J3 (1356648-3)~~

~~3~~ 2. Turn the STE main power switch ON. From the A2 directory, and at the "$" prompt, enter the command to the STE "RUN ~~B~~2." A ~~The A2 software program should be running as evidenced by the STE screen shown in Figure 9.~~

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3 ~~4~~. Turn the STE power supply panel main power switch ON ~~(refer to Figure 3)~~.

4 ~~5~~. Turn the STE power supply panel Q/Main switch ON ~~(refer to Figure 3)~~.

5 ~~6~~. Turn the STE power supply panel N/Pulse switch ON ~~(refer to Figure 3)~~.

6 ~~7~~. From the STE ~~main~~ screen ~~shown in Figure 9~~, enter the STE command [2] "MONITOR ONLY." ~~The screen should now be as shown in Figure 10~~. Enter the STE command "[14] COMMANDS." ~~The screen should now be as shown in Figure 11~~.

7 ~~8~~. Enter the STE command "SCANNER POWER." Wait 18 seconds before issuing the next command.

8 ~~9~~. Enter the STE command "ANTENNA COLD CAL." Wait 18 seconds before issuing the next command. The reflector should scan to the cold calibration beam position.

9 ~~10~~. Enter the STE command "[1] RETURN" to return to the monitor only screen ~~shown in Figure 10~~.

10 ~~11~~. Enter the STE command "[10] SCIENCE DATA." The STE should now display the science data screen ~~shown in Figure 24~~. From this screen enter the STE command "[9] BEAM POSITION NN-ALL CHANNELS."

11 ~~12~~. The STE then prompts "ENTER BEAM POSITION NO (1 TO 30)." Enter "30" to show the radiometric counts data for channels 1 and 2. ~~The STE should now display the radiometric data screen shown in Figure 25 except with a different set of count data.~~ STET STET

12 ~~13~~. Allow the instrument to stabilize for approximately 20 minutes. Enter the STE command "[2]" to obtain a screen only printout.

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13 ~~14~~. Configure the unit and test equipment as shown in Figure ~~26~~ 22. Turn ON the sweeper and allow to warm up approximately 10 minutes. Make sure that the RF power is OFF during sweeper warm up.

CAUTION

Extreme care must be used when turning on RF power. When RF power is first applied the gain horn should be approximately three to four feet from the unit. The RF power setting should be no greater than -20 dBm.

14 ~~15~~. Set the sweeper frequency to 23.8 ± .01 GHz and set the RF power level to -20 dBm. Position the gain horn three to four feet from the instrument so that the antenna and gain horn are approximately aligned. Rotate the gain horn, if needed, to the vertical polarization position.

15 ~~16~~. Turn ON the RF power making sure the power level is set to -20 dBm. Allow the multiplier to warm up approximately five minutes.

16 ~~17~~. At the STE screen, compare the radiometric data counts of channel 1 to the counts printed out at step ~~13~~ 12. Enter the STE command "[2]" to obtain a screen only printout.

17 ~~18~~. From the printouts obtained in steps ~~13~~ 12 and ~~17~~ 16 verify that the radiometric data counts for channel 1 have increased significantly, approximately 10,000 or more, and that the other channels data counts have remained relatively unchanged, less than 300 counts.\

18 ~~19~~. Record the count differences on TDS ~~19~~ 40A of channel 1 from the printouts obtained in steps ~~13~~ 12 and ~~17~~ 16 and attach printouts to TDS ~~19.~~ 40A

19 ~~20~~. Repeat steps ~~15~~ 14 through ~~19~~ 18 for the frequencies and polarizations listed on TDS ~~19.~~ 40A

20 ~~21~~. After both channels have been identified, turn OFF the RF power. Return the reflector to the warm cal position.

21 ~~22~~. Turn the STE Q/Main and N/Pulse switches to OFF

22 ~~23~~. Turn the STE power supply panel main power switch OFF.

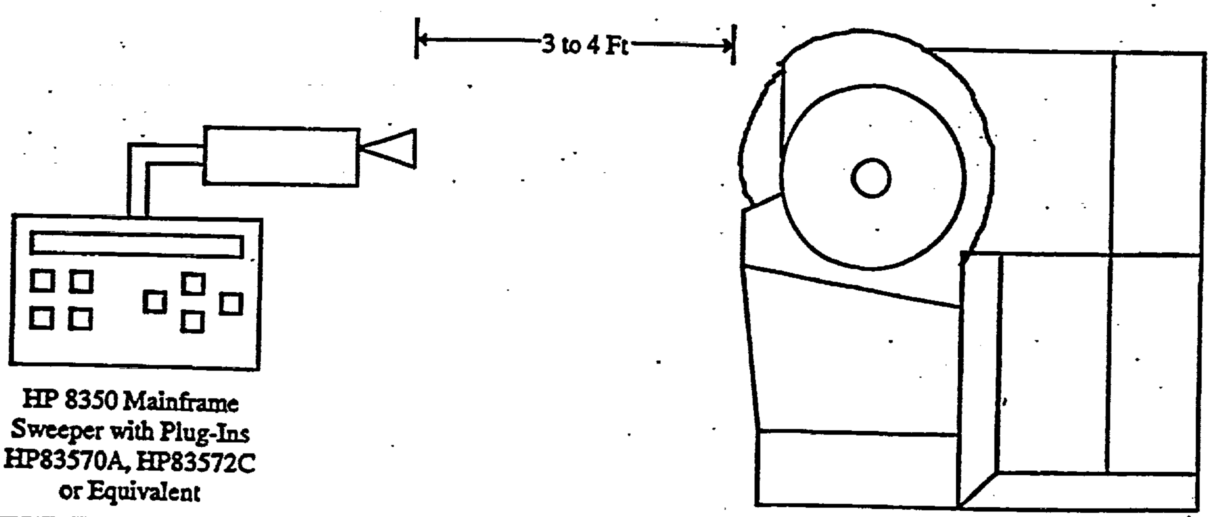

FIGURE ~~2A~~ ~~21A~~ 22

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4. QUALITY ASSURANCE PROVISIONS

4.1 *Responsibility for inspection.* Aerojet Quality Assurance shall inspect in accordance with the requirements of this procedure and S-480-79 and S-480-80. Quality Control shall verify all test set-ups prior to start of test. Bonded softw shall be used for all tests and shall be obtained from Quality Control. Quality Control shall review all test data conformance to success criteria. The test data shall include test limits. For tests that satisfy requirements from S-480-80 protoflight and flight units, customer representatives shall be invited to witness tests and shall be invited to review the d and show approval on the test data sheets.

4.1.1 *Test facilities.* Unless otherwise specified, the examinations and tests described herein shall be conducted at GenC Aerojet, Azusa, CA.

4.1.2 *Electrostatic Device (ESD) handling.* All electronic hardware shall be handled in accordance with Aerojet Stand STD-2454.

4.2 *Monitoring procedures.* All tests in this procedure shall be witnessed by quality control.

4.2.1 *Test equipment.* Test equipment calibration procedures shall comply with the requirements of MIL-STD-45662.

4.2.2 *Software.* Bonded software shall be used at all times.

4.3 *Monitoring procedures for materials.* Not applicable.

4.4 *Certification.* Certification for handling ESD-sensitive equipment is required for all personnel working on the assem and test of the AMSU-A instrument.

4.5 *Test methods*

4.5.1 *Accept-reject criteria.* The accept-reject criteria for each examination or test shall be as specified in the data she included in each phase of the applicable test procedure. The test results shall be recorded on the data sheets to demonstr compliance with the applicable specification requirements. Methods of analysis shall be appropriate for the parameters be inspected. It shall be the responsibility of Aerojet to review the test data and determine conformance of the unit under tes the performance requirements contained in S-480-80 and this specification.

In the event of a failure during any phase of this test procedure, the test activity shall record the required information on Test Anomaly Record (TAR) and alert the design assurance and quality engineers. Except for failures which only represer limited out-of-tolerance condition for a particular parameter and are not expected to interfere with the balance of the test and which are non-destructive, the testing must be stopped until a complete description of the observed anomaly failure documented and a Failure Analysis Strategy (FAS) is formulated, documented, and implemented to preclude loss information or evidence that may facilitate determining the failure cause. The full set of data from the referenced test required in order to formulate a plan of action. The cognizant reliability engineer, quality assurance engineer, and the syst or responsible test engineer shall jointly develop the FAS which must be approved by Design Assurance and Qua Assurance. Analysis and reporting shall be performed per Aerojet procedures.

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5. PREPARATION FOR DELIVERY

This section is not applicable to this specification.

6. NOTES

6.1 *Acronyms and abbreviations*

AMSU	Advanced Microwave Sounding Unit
ATB	Analog telemetry bus
AWG	American Wire Gage
BP	Beam Position
CAL	Calibrate
CPT	Comprehensive performance test
d	delta
DC	Direct current
DVM	Digital volt meter
EMI	Electromagnetic interference
ESD	Electrostatic Sensitive Device
EXT	External
FAS	Failure analysis strategy
GHz	Gigahertz
GIIS	General Instrument Interface Specification
GND	Ground
GSE	Ground Support Equipment
HTR	Heater
kHz	Kilohertz
LPT	Limited performance test
LSB	Least significant bit
MA	Milliamp
METSAT	Meteorological Satellite
MLB	Main load bus
MFG	Manufacturer
MMW	Millimeter wave
MS, MSEC	Millisecond
MSB	Most significant bit
MV	Millivolt
NEΔT	Noise equivalent delta temperature
PFM	Protoflight Model
PLB	Pulse load bus
PLL	Phase lock loop
PLLO	Phase lock loop oscillator

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POS	Position
PWR	Power
RTN	Return
STE	Special Test Equipment
SW	
TAR	Test Anomaly Record
TDS	Test Data Sheet
TLM	Telemetry
TM	Instrument Temperature
UIIS	Unique Instrument Interface Specification
Vdc	Volts, direct current
µs	Microsecond

6.2 *Changes*. The outside margins of this document have been marked to indicate where modifications, deletions, or additions have been made since the previous issue. This is done solely as a convenience to users, who are cautioned to evaluate the requirements of this change and the parent standard based on the entire content as written, regardless of the marginal notations and relationship to the previous issue.

APPENDIX A

TEST DATA SHEETS

10. APPENDIX A

10.1 *Scope.* This appendix contains the test data sheets for all tests and inspections listed in section 3.

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APPENDIX A

TEST DATA SHEETS

10. APPENDIX A

10.1 *Scope.* This appendix contains the test data sheets for all tests and inspections listed in section 3.

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TEST DATA SHEET 1 (SHEET 1 OF 9)
Grounding Test (Paragraph 3.2.4.1)

J1 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	+28V MLB	> 100k	>100KΩ	P
J1-2	+28V MLB	> 100k		P
J1-3	+28V MLB RTN	> 100k		P
J1-4	+28V MLB RTN	> 100k		P
J1-5	+28V PLB	> 100k		P
J1-6	+28V PLB	> 100k		P
J1-7	+28V PLB RTN	> 100k		P
J1-8	+28V PLB RTN	> 100k		P
J1-9	+28V TMB	> 100k		P
J1-10	28V TMB RTN	> 100k		P
J1-11	NO CONNECTION	> 100k		P
J1-12	NO CONNECTION	> 100k	> 100KΩ	P
J1-13	CHASSIS GROUND (E1)	< 1	.31 Ω	P
J1-14	+28V MLB	> 100k	>100KΩ	P
J1-15	+28V MLB	> 100k		P
J1-16	+28V MLB RTN	> 100k		P
J1-17	+28V MLB RTN	> 100k		P
J1-18	+28V PLB	> 100k		P
J1-19	+28V PLB	> 100k		P
J1-20	+28V PLB RTN	> 100k		P
J1-21	+28V PLB RTN	> 100k		P
J1-22	+28V TMB	> 100k		P
J1-23	28V TMB RTN	> 100k		P
J1-24	SAFETY HTR PWR	> 100k		P
J1-25	SAFETY HTR RTN	> 100k	>100KΩ	P

TEST DATA SHEET 1 (Sheet 2 of 9)
Grounding Test (Paragraph 3.2.4.1)

J2 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-1	Chassis Ground (E2)	< 1	.30 Ω	P
J2-2	DATA CLOCK (C1)	> 100k	>100KΩ	P
J2-3	Signal Return	> 100k		P
J2-4	No Connection	> 100k		P
J2-5	DIGITAL A DATA OUT	> 100k		P
J2-6	DATA ENABLE (A1)	> 100k		P
J2-7	8 SEC SYNC PULSE	> 100k		P
J2-8	No Connection	> 100k		P
J2-9	No Connection	> 100k	>100KΩ	P

J3 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J3-1	1.248 MHz CLK	> 100k	>100KΩ	P
J3-2	1.248 MHz CLK RTN	> 100k	>100KΩ	P
J3-3	Chassis GND (E3)	< 1	.17 Ω	P

J5 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J5-1	Chassis Ground (E5)	< 1	.26 Ω	P
J5-2	MODULE PWR IND	> 100k	>100KΩ	P
J5-3	COLD CAL POS MSB (OUT)	> 100k		P
J5-4	No Connection	> 100k		P
J5-5	COMP MTR IND	> 100k		P
J5-6	ANT IN COLD CAL POS	> 100k		P
J5-7	No Connection	> 100k		P
J5-8	No Connection	> 100k		P
J5-9	SURV HTR ON/OFF	> 100k		P
J5-10	No Connection	> 100k		P
J5-11	COLD CAL POS LSB (OUT)	> 100k		P
J5-12	SCANNER ON PWR IND	> 100k		P
J5-13	ANT IN WARM CAL POS	> 100k		P
J5-14	ANT AT NADIR POS	> 100k		P
J5-15	FULL SCAN MODE	> 100k	>100KΩ	P

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TEST DATA SHEET 1 (Sheet 3 of 9)
Grounding Test (Paragraph 3.2.4.1)

J4 of Spacecraft Interface				
From Chassis Ground to	**Pin Description**	**Required Resistance (Ohms)**	**Measured Value (Ohms)**	**Pass/Fail**
J4-1	Chassis Ground (E4)	< 1	.23 Ω	P
J4-2	MODULE PWR DISCONN	> 100k	>100kΩ	P
J4-3	SURVIVAL HTR ON	> 100k		P
J4-4	MODULE TOTALLY OFF	> 100k		P
J4-5	COMP MTR ON/OFF	> 100k		P
J4-6	ANT AT COLD CAL POS	> 100k		P
J4-7	No Connection	> 100k		P
J4-8	ANT AT NADIR POS	> 100k		P
J4-9	COLD CAL POS MSB (IN)	> 100k		P
J4-10	No Connection	> 100k		P
J4-11	No Connection	> 100k		P
J4-12	+10V INTERFACE BUS	> 100k		P
J4-13	10V INTERFACE BUS RTN	> 100k		P
J4-14	MODULE PWR CONN	> 100k		P
J4-15	SURVIVAL HTR OFF	> 100k		P
J4-16	SCANNER PWR ON/OFF	> 100k		P
J4-17	ANT AT WARM CAL POS	> 100k		P
J4-18	FULL SCAN	> 100k		P
J4-19	COLD CAL POS LSB (IN)	> 100k		P
J4-20	No Connection	> 100k		P
J4-21	No Connection	> 100k		P
J4-22	No Connection	> 100k		P
J4-23	No Connection	> 100k		P
J4-24	+10V INTERFACE BUS	> 100k		P
J4-25	10V INTERFACE BUS RTN	> 100k	>100KΩ	P

TEST DATA SHEET 1 (Sheet 4 of 9)
Grounding Test (Paragraph 3.2.4.1)

J6 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-1	Chassis GND (E6)	< 1	.18 Ω	P
J6-2	RF SHELF TEMP	> 100k	>100KΩ	P
J6-3	COMP. MTR. TEMP	> 100k		P
J6-4	WARM LOAD TEMP	> 100k		P
J6-5	No Connection	> 100k		P
J6-6	No Connection	> 100k		P
J6-7	No Connection	> 100k		P
J6-8	SCAN MTR CURR	> 100k		P
J6-9	+15V ANT DR MON	> 100k		P
J6-10	+15V ANT DR MON	> 100k		P
J6-11	+15V SIG PROC MON	> 100k		P
J6-12	+15V SIG PROC MON	> 100k		P
J6-13	L.O. #1 MON	> 100k		P
J6-14	No Connection	> 100k		P
J6-15	No Connection	> 100k		P
J6-16	No Connection	> 100k		P
J6-17	No Connection	> 100k		P
J6-18	No Connection	> 100k		P
J6-19	No Connection	> 100k		P
J6-20	28V TMB RTN	> 100k		P
J6-21	No Connection	> 100k		P
J6-22	SCAN MTR TEMP	> 100k		P
J6-23	No Connection	> 100k		P
J6-24	No Connection	> 100k		P
J6-25	No Connection	> 100k		P
J6-26	No Connection	> 100k		P
J6-27	COMP MTR CURR	> 100k		P
J6-28	-15V ANT DR MON	> 100k		P
J6-29	-15V SIG PROC MON	> 100k		P
J6-30	L.O. #2 MON	> 100k		P
J6-31	No Connection	> 100k		P
J6-32	No Connection	> 100k		P
J6-33	No Connection	> 100k		P
J6-34	MIXER/AMP MON	> 100k		P
J6-35	No Connection	> 100k		P
J6-36	No Connection	> 100k		P
J6-37	No Connection	> 100k	>100KΩ	P

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TEST DATA SHEET 1 (Sheet 5 of 9)
Grounding Test (Paragraph 3.2.4.1)

J7 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J7-1	Chassis GND (E7)	< 1	.21Ω	P
J7-2	No Connection	> 100k	>100KΩ	P
J7-3	No Connection	> 100k		P
J7-4	No Connection	> 100k		P
J7-5	15V RTN (2/3)	> 100k		P
J7-6	DUMP TP	> 100k		P
J7-7	No Connection	> 100k		P
J7-8	CH1 ANALOG OUT TP	> 100k		P
J7-9	CH2 ANALOG OUT TP	> 100k		P
J7-10	No Connection	> 100k		P
J7-11	No Connection	> 100k		P
J7-12	No Connection	> 100k		P
J7-13	No Connection	> 100k		P
J7-14	No Connection	> 100k		P
J7-15	No Connection	> 100k		P
J7-16	No Connection	> 100k		P
J7-17	GSE CMD LSB	> 100k		P
J7-18	GSE CMD MSB-1	> 100k		P
J7-19	+5VDC GSE INTERLOCK A	> 100k		P
J7-20	No Connection	> 100k		P
J7-21	No Connection	> 100k		P
J7-22	No Connection	> 100k		P
J7-23	I/H TP	> 100k		P
J7-24	No Connection	> 100k		P
J7-25	No Connection	> 100k		P
J7-26	15V RTN (2/3)	> 100k		P
J7-27	No Connection	> 100k		P
J7-28	No Connection	> 100k		P
J7-29	No Connection	> 100k		P
J7-30	No Connection	> 100k		P
J7-31	No Connection	> 100k		P
J7-32	No Connection	> 100k		P
J7-33	No Connection	> 100k		P
J7-34	No Connection	> 100k		P
J7-35	GSE CMD MSB	> 100k		P
J7-36	5V RTN (1)	> 100k		P
J7-37	+5VDC GSE INTERLOCK B	> 100k	>100kΩ	P

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TEST DATA SHEET 1 (Sheet 6 of 9)
Grounding Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	J1-2	+28V MLB	< 1	.39Ω	P
J1-1	J1-14	+28V MLB	< 1	.22Ω	
J1-1	J1-15	+28V MLB	< 1	.33Ω	
J1-3	J1-4	28V MLB RTN	< 1	.60Ω	
J1-3	J1-16	28V MLB RTN	< 1	.21Ω	
J1-3	J1-17	28V MLB RTN	< 1	.43Ω	
J1-5	J1-6	+28V PLB	< 1	.30Ω	
J1-5	J1-18	+28V PLB	< 1	.34Ω	
J1-5	J1-19	+28V PLB	< 1	.37Ω	
J1-7	J1-8	28V PLB RTN	< 1	.31Ω	
J1-7	J1-20	28V PLB RTN	< 1	.34Ω	
J1-7	J1-21	28V PLB RTN	< 1	.30Ω	
J1-9	J1-22	+28V TMB	< 1	.39Ω	
J1-10	J1-23	28V TMB RTN	< 1	.24Ω	
J1-10	J6-20	28V TMB RTN	< 1	.34Ω	
J4-12	J4-24	+10V INTERFACE BUS	< 1	.29Ω	
J4-13	J4-25	10V INTERFACE BUS RTN	< 1	.34Ω	
J1-1	J1-3	+28V MLB	> 100k	>100K	
J1-1	J1-5	+28V MLB	> 100k		
J1-1	J1-7	+28V MLB	> 100k		
J1-1	J1-9	+28V MLB	> 100k		
J1-1	J1-10	+28V MLB	> 100k		
J1-1	J1-24	+28V MLB	> 100k		
J1-1	J1-25	+28V MLB	> 100k		
J1-1	J2-3	+28V MLB	> 100k		
J1-1	J4-12	+28V MLB	> 100k		
J1-1	J4-13	+28V MLB	> 100k		
J1-3	J1-5	28V MLB RTN	> 100k		
J1-3	J1-7	28V MLB RTN	> 100k		
J1-3	J1-9	28V MLB RTN	> 100k		
J1-3	J1-10	28V MLB RTN	> 100k		
J1-3	J1-24	28V MLB RTN	> 100k		
J1-3	J1-25	28V MLB RTN	> 100k		
J1-3	J2-3	28V MLB RTN	> 100k		
J1-3	J4-12	28V MLB RTN	> 100k		
J1-3	J4-13	28V MLB RTN	> 100k		

SHEET 95 OF ___
ECR NO. 1980

TEST DATA SHEET 1 (Sheet 7 of 9)
Grounding Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-5	J1-7	+28V PLB	> 100k	>100k	P
J1-5	J1-9	+28V PLB	> 100k		
J1-5	J1-10	+28V PLB	> 100k		
J1-5	J1-24	+28V PLB	> 100k		
J1-5	J1-25	+28V PLB	> 100k		
J1-5	J2-3	+28V PLB	> 100k		
J1-5	J4-12	+28V PLB	> 100k		
J1-5	J4-13	+28V PLB	> 100k		
J1-7	J1-9	28V PLB RTN	> 100k		
J1-7	J1-10	28V PLB RTN	> 100k		
J1-7	J1-24	28V PLB RTN	> 100k		
J1-7	J1-25	28V PLB RTN	> 100k		
J1-7	J2-3	28V PLB RTN	> 100k		
J1-7	J4-12	28V PLB RTN	> 100k		
J1-7	J4-13	28V PLB RTN	> 100k		
J1-9	J1-10	+28V TMB	> 100k		
J1-9	J1-24	+28V TMB	> 100k		
J1-9	J1-25	+28V TMB	> 100k		
J1-9	J2-3	+28V TMB	> 100k		
J1-9	J4-12	+28V TMB	> 100k		
J1-9	J4-13	+28V TMB	> 100k		
J1-10	J1-24	28V TMB RTN	> 100k		
J1-10	J1-25	28V TMB RTN	> 100k		
J1-10	J2-3	28V TMB RTN	> 100k		
J1-10	J4-12	28V TMB RTN	> 100k		
J1-10	J4-13	28V TMB RTN	> 100k		
J1-24	J1-25	SAFETY HTR PWR	> 100k		
J1-24	J2-3	SAFETY HTR PWR	> 100k		
J1-24	J4-12	SAFETY HTR PWR	> 100k		
J1-24	J4-13	SAFETY HTR PWR	> 100k		
J1-25	J2-3	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-12	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-13	SAFETY HTR PWR RTN	> 100k		
J2-3	J4-12	SIGNAL RTN	> 100k		
J2-3	J4-13	SIGNAL RTN	> 100k		
J4-12	J4-13	+10V INTERFACE BUS	> 100k		

TEST DATA SHEET 1 (Sheet 8 of 9)
Grounding Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-2	J4-13	DATA CLOCK (C1)	> 2k	>2k	P
J2-5	J4-13	DIGITAL A DATA OUT	> 2k		
J2-6	J4-13	DATA ENABLE (A1)	> 2k		
J2-7	J4-13	8 SEC SYNC PULSE	> 2k		
J3-1	J4-13	1.248 MHZ CLK	> 2k		
J3-2	J4-13	1.248 MHZ CLK RTN	> 2k		
J4-2	J4-13	MODULE PWR DISCONN	> 2k		
J4-3	J4-13	SURVIVAL HTR ON	> 2k		
J4-4	J4-13	MODULE TOTALLY OFF	> 2k		
J4-5	J4-13	COMP MTR ON/OFF	> 2k		
J4-6	J4-13	ANT AT COLD CAL POS	> 2k		
J4-8	J4-13	ANT AT NADIR POS	> 2k		
J4-9	J4-13	COLD CAL POS MSB (IN)	> 2k		
J4-14	J4-13	MODULE PWR CONN	> 2k		
J4-15	J4-13	SURVIVAL HTR OFF	> 2k		
J4-16	J4-13	SCANNER PWR ON/OFF	> 2k		
J4-17	J4-13	ANT AT WARM CAL POS	> 2k		
J4-18	J4-13	FULL SCAN	> 2k		
J4-19	J4-13	COLD CAL POS LSB (IN)	> 2k		
J5-2	J4-13	MODULE PWR IND	> 2k		
J5-3	J4-13	COLD CAL POS MSB	> 2k		
J5-5	J4-13	COMP MTR IND	> 2k		
J5-6	J4-13	ANT IN COLD CAL POS	> 2k		
J5-9	J4-13	SURV HTR ON/OFF	> 2k		
J5-11	J4-13	COLD CAL POS LSB	> 2k		
J5-12	J4-13	SCANNER ON PWR IND	> 2k		
J5-13	J4-13	ANT IN WARM CAL POS	> 2k		
J5-14	J4-13	ANT IN NADIR POS	> 2k		
J5-15	J4-13	FULL SCAN MODE	> 2k		

SHEET 97 OF ____
ECR NO. 1980

TEST DATA SHEET 1 (Sheet 9 of 9)
Grounding Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-8	J4-13	SCAN MTR CURR	> 2k	>2K	P
J6-9	J4-13	+15V ANT DR MON	> 2k		
J6-10	J4-13	+5V ANT DR MON	> 2k		
J6-11	J4-13	+15V SIG PROC MON	> 2k		
J6-12	J4-13	+5V SIG PROC MON	> 2k		
J6-13	J4-13	L.O. #1 MON	> 2k		
J6-20	J4-13	28V TMB RTN	> 2k		
J6-22	J4-13	SCAN MTR TEMP	> 2k		
J6-27	J4-13	COMP MTR CURR	> 2k		
J6-28	J4-13	-15V ANT DR MON	> 2k		
J6-29	J4-13	-15V SIG PROC MON	> 2k		
J6-30	J4-13	L.O. #2 MON	> 2k		
J6-34	J4-13	MIXER/AMP MON	> 2k		
J6-2	J1-10	RF SHELF TEMP	> 2k		
J6-3	J1-10	COMP MTR TEMP	> 2k		
J6-4	J1-10	WARM LOAD TEMP	> 2k		

QC 16

METSAT/AMSU A2 System ~~CPT~~ P/N IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: ~~335166~~ 584763 3-3-99 S/N: 105
LPT ________

AMSU 8 SEIT

R. Haigh 3-2-99
Test Systems Engineer Date

262 3-4-99
Quality Control Date

G. Galacgac 3-4-99
Customer Representative (Flight Hardware Only) Date

TEST DATA SHEET 2
+28 MLB Turn-on Transient (Paragraph 3.2.4.2.1.1)

Kg 11/23

At 28.56 Vdc:

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
7	Peak Current	4.90 Amps	~~<5.25~~ Amps 8.3 Amps	P
7	Pulse Width	62.77 ms	~~<77.5~~ ms 100	P
7	Rate of Change (Slope): dI/dT	114.56 mA/µs	~~<575~~ mA/µs 640	P

At 27.44 Vdc:

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
7	Peak Current	4.73 Amps	~~<5.25~~ Amps 8.3 Amps	P
7	Pulse Width	63.09 ms	~~<77.5~~ ms 100	P
7	Rate of Change (Slope): dI/dT	113.25 mA/µs	~~<575~~ mA/µs 640	P

At 28.00 Vdc:

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
7	Peak Current	4.76 Amps	~~<5.25~~ Amps 8.3 Amps	P
7	Pulse Width	62.41 ms	~~<77.5~~ ms 100	P
7	Rate of Change (Slope): dI/dT	111.42 mA/µs	~~<575~~ mA/µs 640	P

METSAT/AMSU A2 System CPT P/N IS-1331200-2-TST Shop Order: 584763 S/N: 105

Circle Test: 1st CPT Final CPT Sub CPT ________

AMSU 8 SEIT

3-3-99
Test Systems Engineer Date

F. Kolaagac 3-4-99
Customer Representative Date
(Flight Hardware Only)

7A 262 3/4/99
Quality Control Date

SHEET 99 OF
ECR NO. 1980

TEST DATA SHEET 3
+28 MLB Operating Power (Paragraph 3.2.4.2.1.2)

Step	+28V MLB at 27 Volts	Measured	Units	Required	Pass/Fail
4	+28V MLB voltage at 27V (V_b) (Measured)	27.008 V	Volts	27.0 ± 0.1	P
5	Average Current (I_V)	0.600 A	Amps	N/A	N/A
6	+28V MLB bus power = $I_V \times V_b$	16.20 W	Watts	25W max	P
	+28V MLB at 28 Volts				
7	+28V MLB Bus Voltage at 28V (V_b) (Measured)	28.03 V	Volts	28.0 ± 0.1	P
8	Average Current (I_V)	0.580 A	Amps	N/A	N/A
9	+28V MLB Operating Power = I_V X V_b	16.26 W	Watts	25W max	P
	+28V MLB at 29 Volts				
10	+28V MLB voltage at 29V (V_b) (Measured)	29.005 V	Volts	29.0 ± 0.1	P
11	Average Current (I_V)	0.560 A	Amps	N/A	N/A
12	+28V MLB operating power = $I_V \times V_b$	16.24 W	Watts	25W max	P

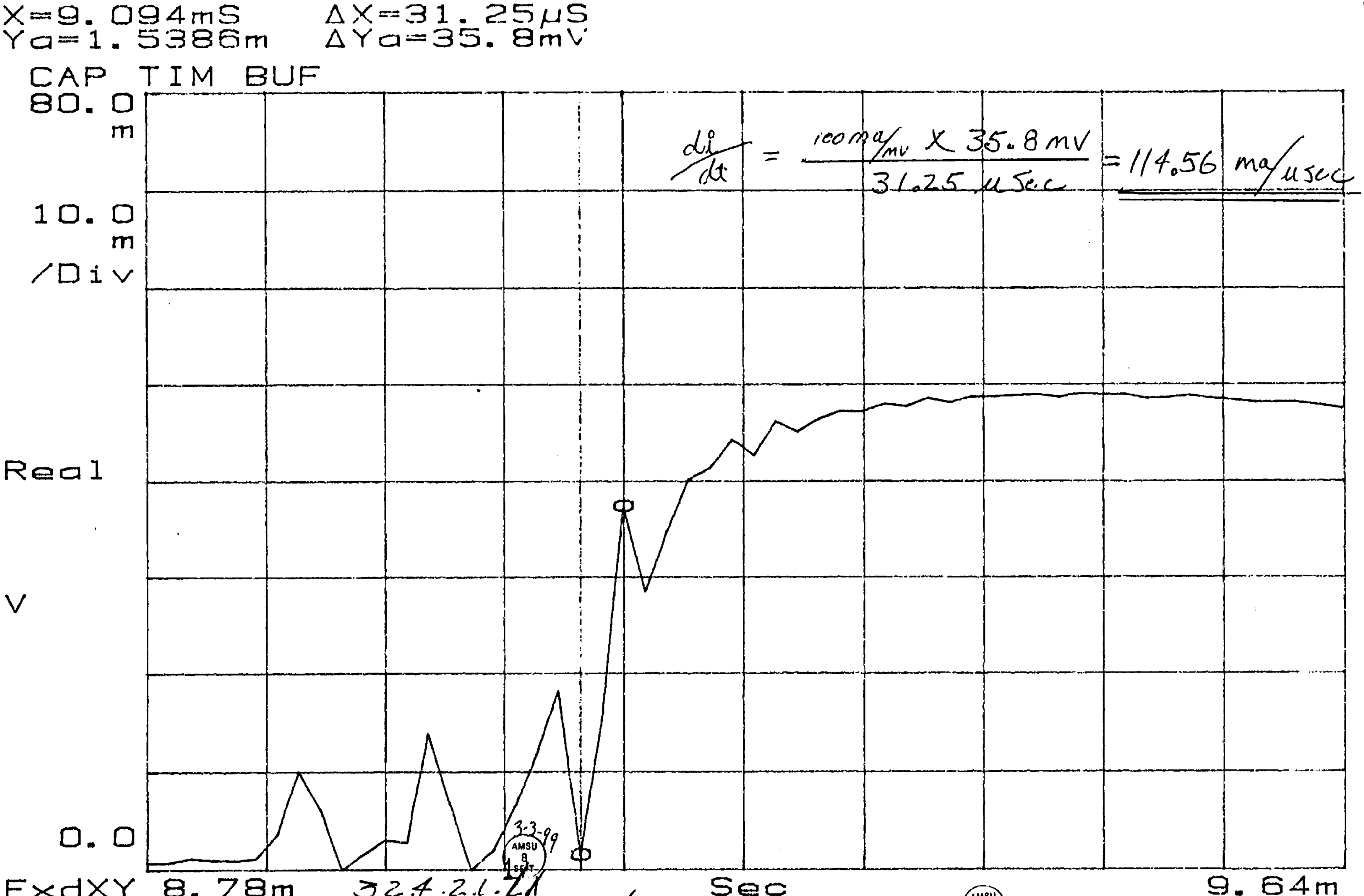
METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ______

AMSU 8 SEIT

3-3-99
Test Systems Engineer Date

[signature] 3-4-99
Customer Representative Date
(Flight Hardware Only)

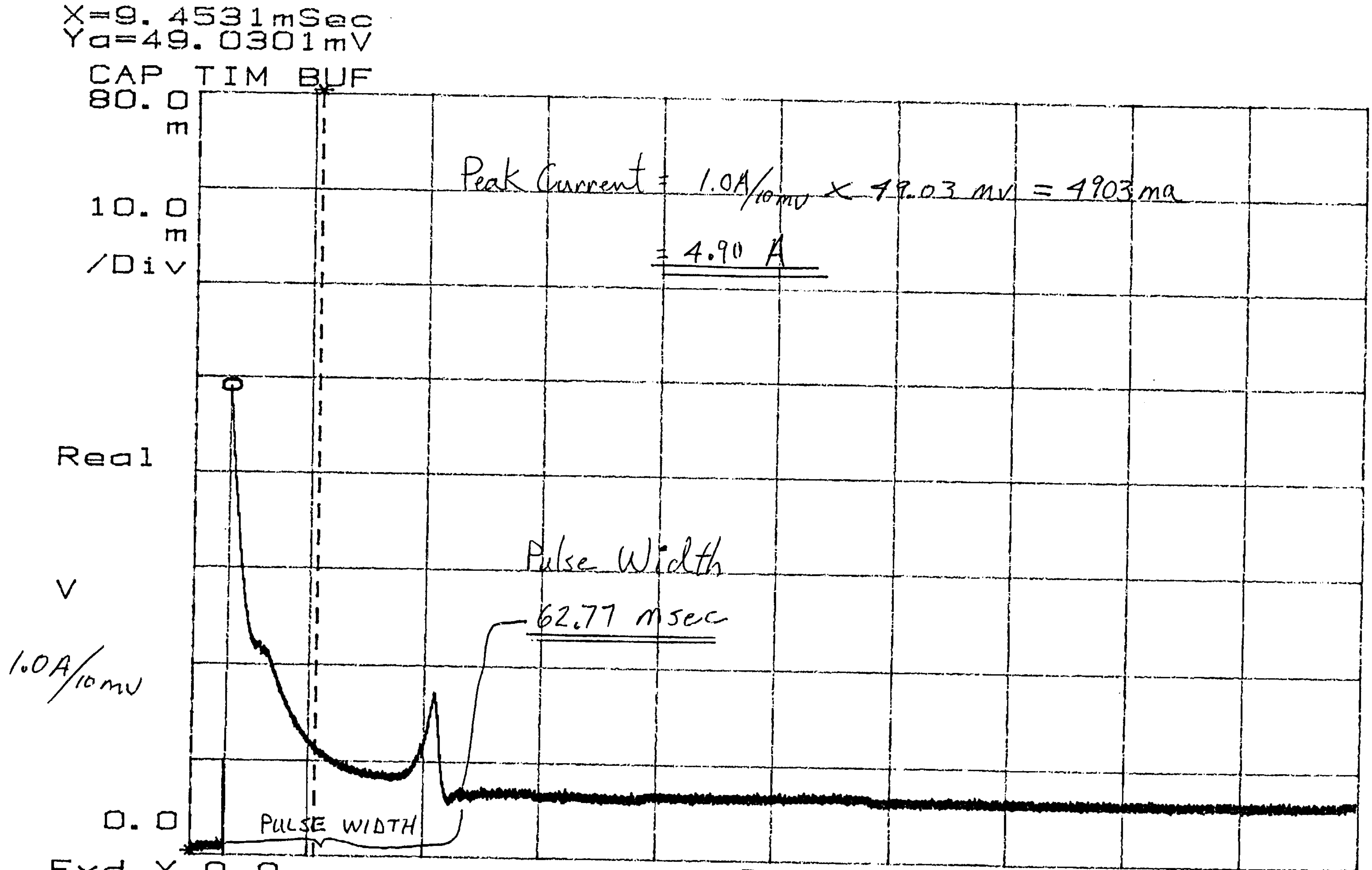
7A 262 3-4-99
Quality Control Date



S/O: 584763 MLB TURN-ON di/dt Test Eng: AMSU 8 SEIT Date: 3-3-99

P/N: 1331200-2-TST SN: 105 +28.56 V Quality: 7A 262 3-4-91

TDS-2



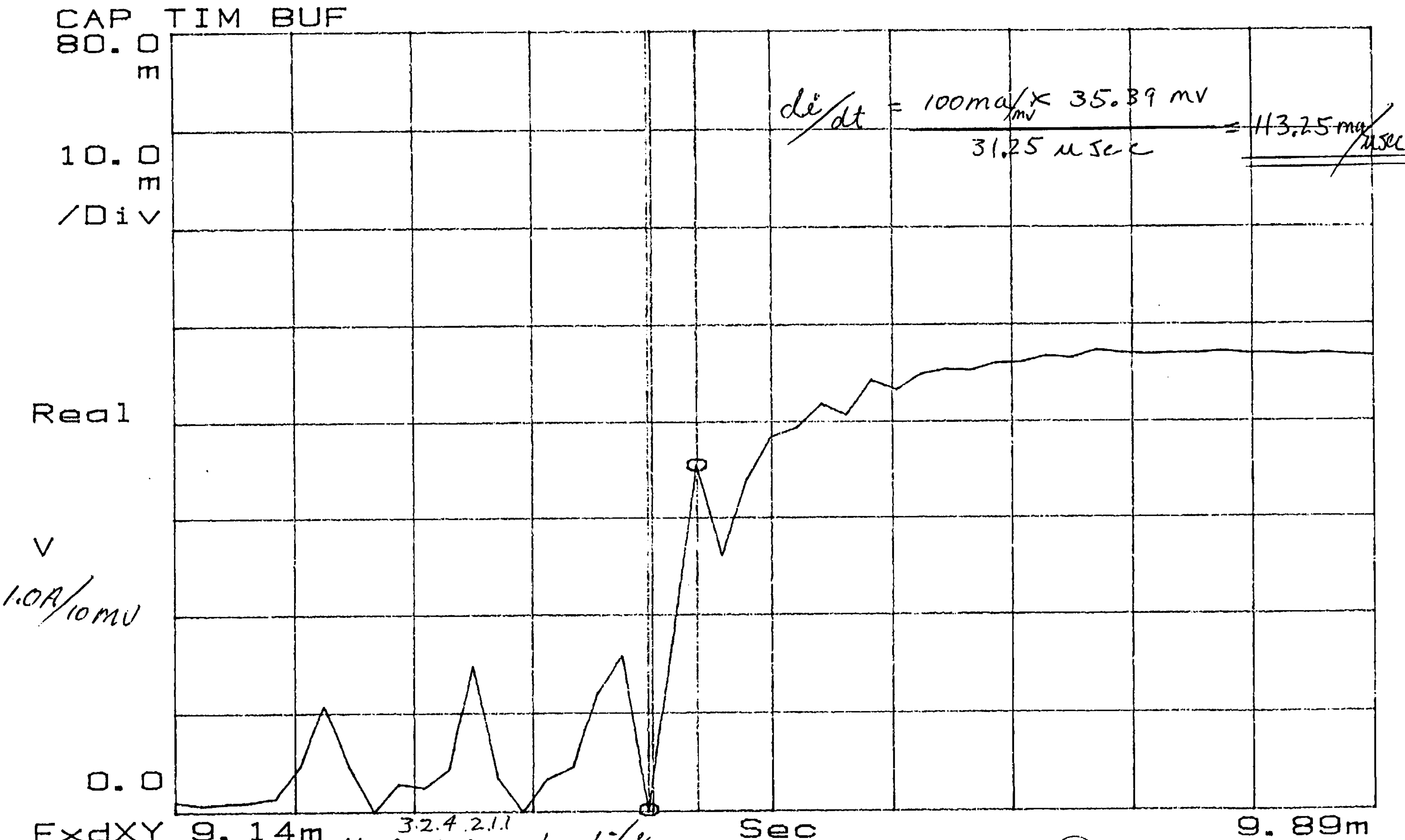
MLB TURN-ON OPERATIONA POWER
3.2.4.2.1.(1) +28.56 V
TDS-2

S/O: 584763
P/N: 133200-2-TST SN: 105

Test Eng: AMSU 8 SEIT Date: 3-3-99

Quality: 7A 262 3/4/99

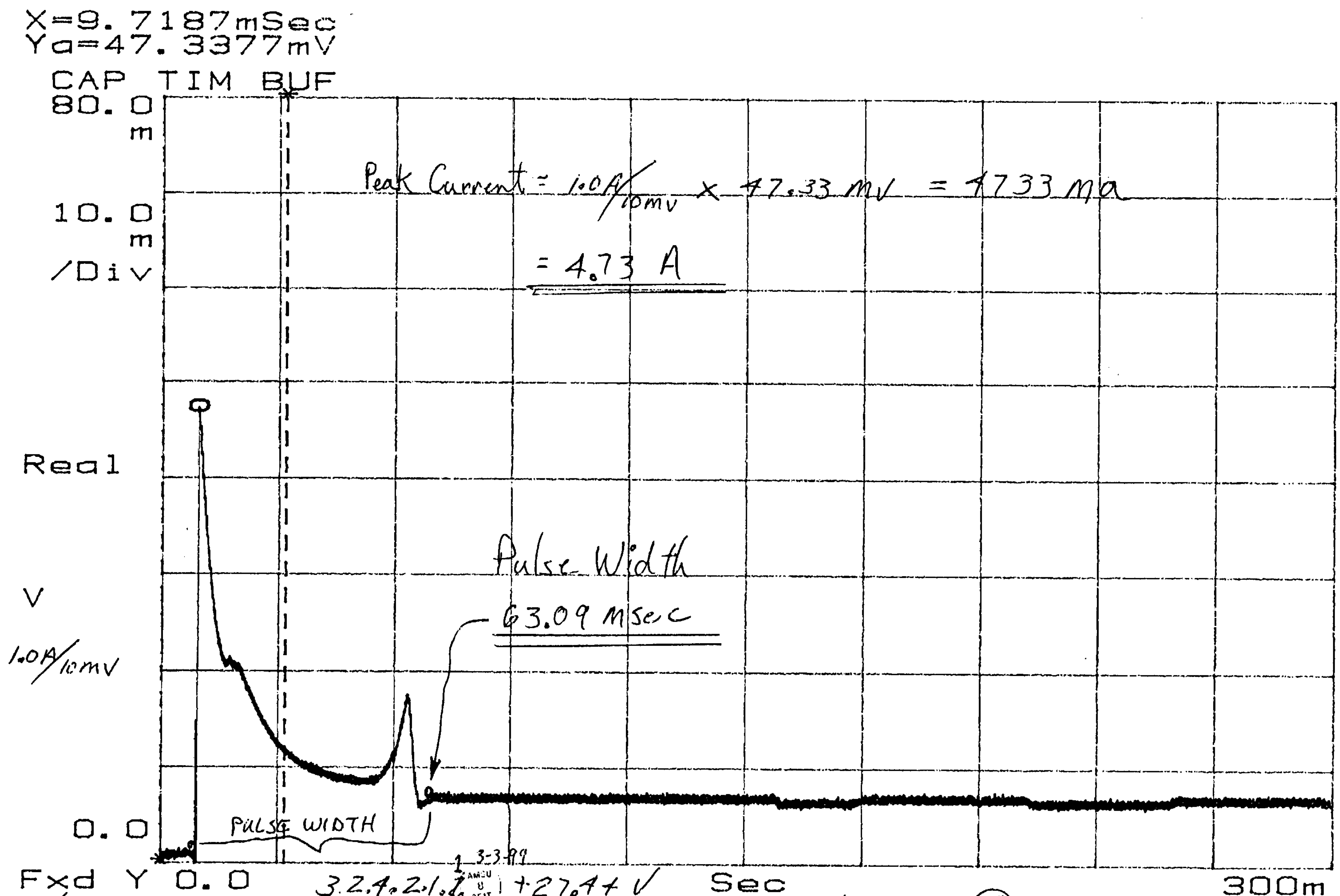
X=9.437mS ΔX=31.25µS
Ya=102.573µ ΔYa=35.39mV



3.2.4.2.1.1
MLB TURN-ON di/dt
+27.44 V
TDS-2

S/O: 584763
P/N: 1331200-2-TST SN: 105

Test Eng: AMSU 8 SEIT Date: 3-3-99
Quality: 7A 262 3-4-99



S/O: 584763 MLB TURN-ON OPERATING POWER Test Eng: Date: 3-3-99

P/N: 133/200-2-TST SN: 105 TDS-2 Quality: 3-4-99

X=9.359mS ΔX=31.25µS
Ya=32.5158m ΔYa=34.82mV
CAP TIM BUF

80.0 m

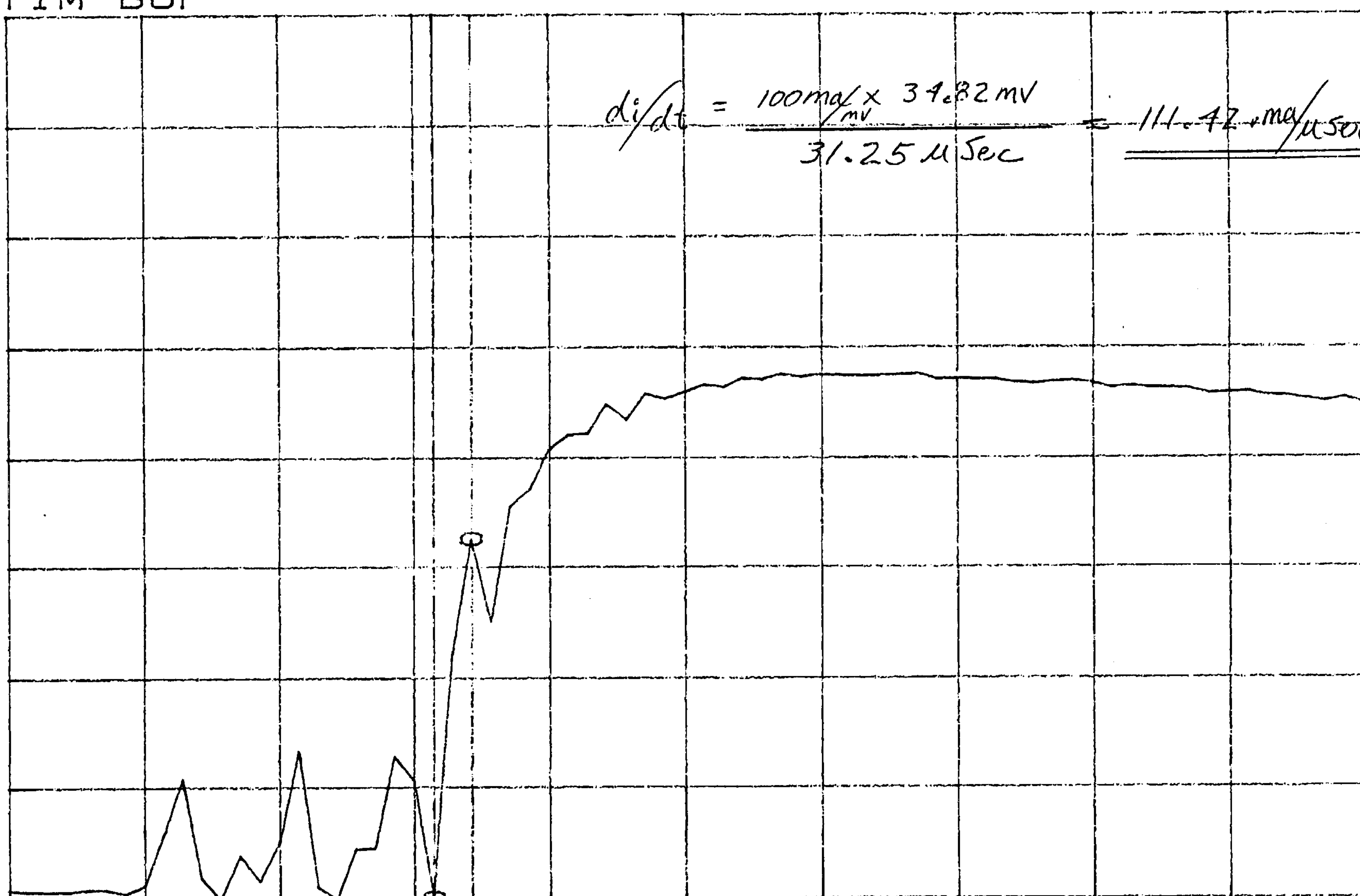
10.0 m /Div

Real

V

1.0 A/10mV

0.0



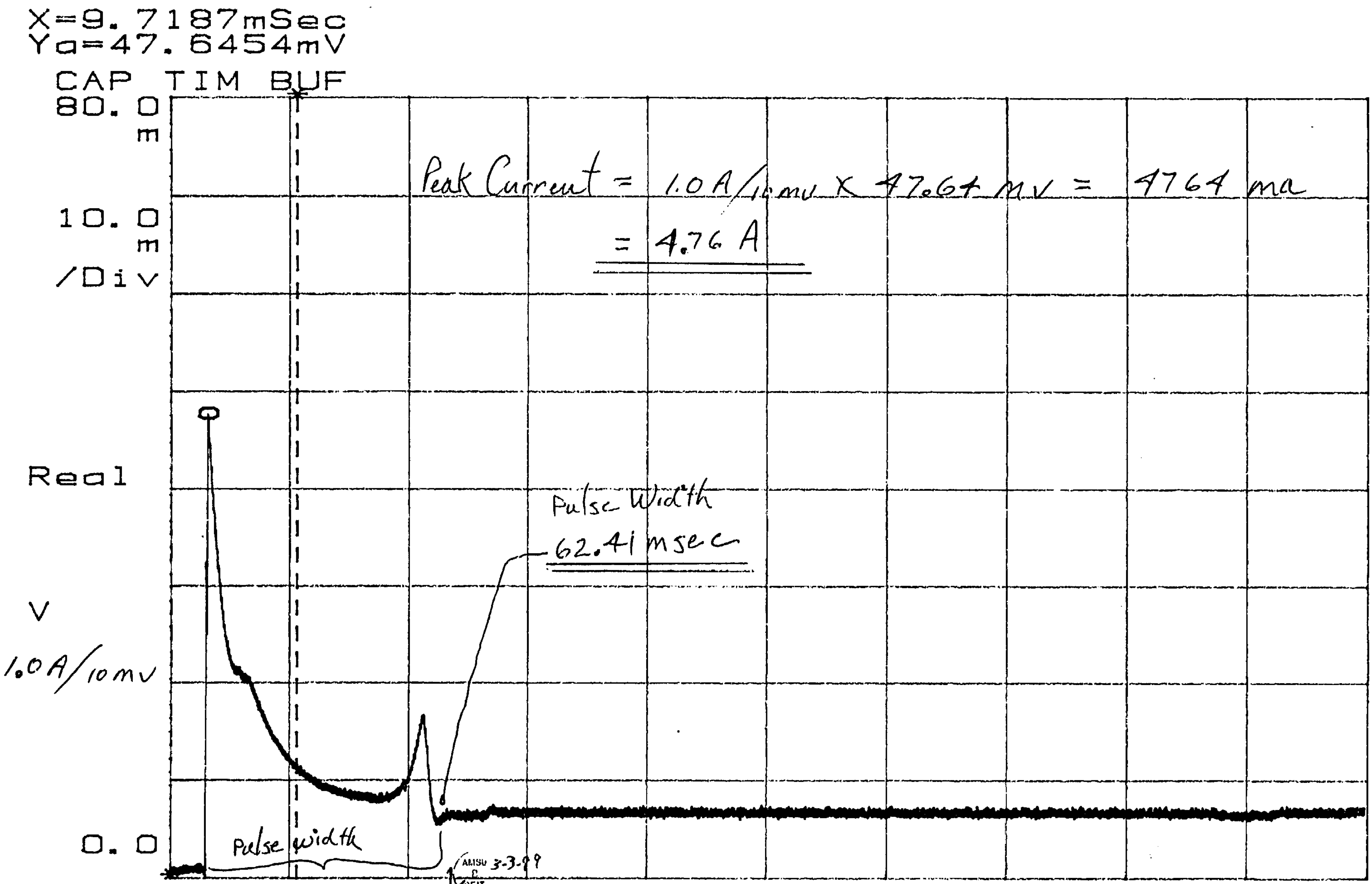
FxdXY 8.98m Sec 10.1m

324.2.1.1
MLB TURN-ON di/dt
+28.03 V
TDS-2

S/O: 584763
P/N: 1331200-2-TST SN: 1075
3-3-99 AMSU B

Test Eng: AMSU B SEIT Date: 3-3-99

Quality: 7A 262 3-4-99



3.2.4.2.1.2 + 28.03 V

MLB OPERATING POWER

S/O: 584763

P/N: 133/200-2-TST SN: 105 TDS-2

Test Eng: AMSU 8 SEIT Date: 3-3-99

Quality: 7A 262 3-4-99

TEST DATA SHEET 4
+28 Pulse Load Bus (Paragraph 3.2.4.2.2.1-3.2.4.2.2.5)

Peak current

Paragraph	Parameter	Measured or Calculated	Required	Pass/ Fail
3.2.4.2.2.1	From -0.1 to two seconds			
	Peak Current = I_p	1.881 Amps	2.2 amps max	P
3.2.4.2.2.2	From 2 to 4 seconds			
	Peak Current = I_p	1.85 Amps	2.2 amps max	P
3.2.4.2.2.3	From 4 to 6 seconds			
	Peak Current = I_p	1.859 Amps	2.2 amps max	P
3.2.4.2.2.4	From 6 to 8 seconds			
	Peak Current = I_p	1.862 Amps	2.2 amps max	P
3.2.4.2.2.~~5~~ 7 3-4-99	Turn-on Transient:			
ENG 248	dI/dT Peak Current = I_p	2816.6 mA/µs 7.18 Amps	~~≤ 1500 mA/µs *~~ ~~≤15 Amps~~	846 mA/µs P 9.6 AMPS
3.2.4.2.2.5	EIGHT SEC. Integrated Current Measurement CURRENT	224.17 mA/sec.	NONE	P

* Refer to Figure 9.

Bus current during the I/H,D period

Paragraph	Parameter	Measured or Calculated	Pass/ Fail
3.2.4.2.2.1	From -0.1 to 2 seconds	10.3 mA	N/A
3.2.4.2.2.2	From 2 to 4 seconds	10.9 mA	N/A
3.2.4.2.2.3	From 4 to 6 seconds	12.2 mA	N/A
3.2.4.2.2.4	From 6 to 8 seconds	11.57 mA	N/A

Bus current during warm cal, cold cal, and nadir

Paragraph	Parameter	Measured	Pass/ Fail
3.2.4.2.2.6 (2)	Warm cal	0.0 mA	N/A
3.2.4.2.2.6 (3)	Cold cal	0.0 mA	N/A
3.2.4.2.2.6 (4)	Nadir	0.0 mA	N/A

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT **Final CPT**

AMSU 8 SEIT 3-8-99
Test Systems Engineer Date

F. Galacgar 3-4-99
Customer Representative Date
(Flight Hardware Only)

7A 262 3-4-99
Quality Control Date

SHEET 101 OF ____
ECR NO. 1980

TEST DATA SHEET 5
+28V Analog Telemetry Bus (Paragraph 3.2.4.2.3)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	+28V ATB Bus Voltage (V_{at}) (Measured)	28.25 Volts	28.0 ±.5	P
3	Av. Current (I_a)	1.18 mA	7 mA max	P
4	+28V ATB Bus Power = I_a X V_{at}	33.3 mW	200 mW max	P

91
QC

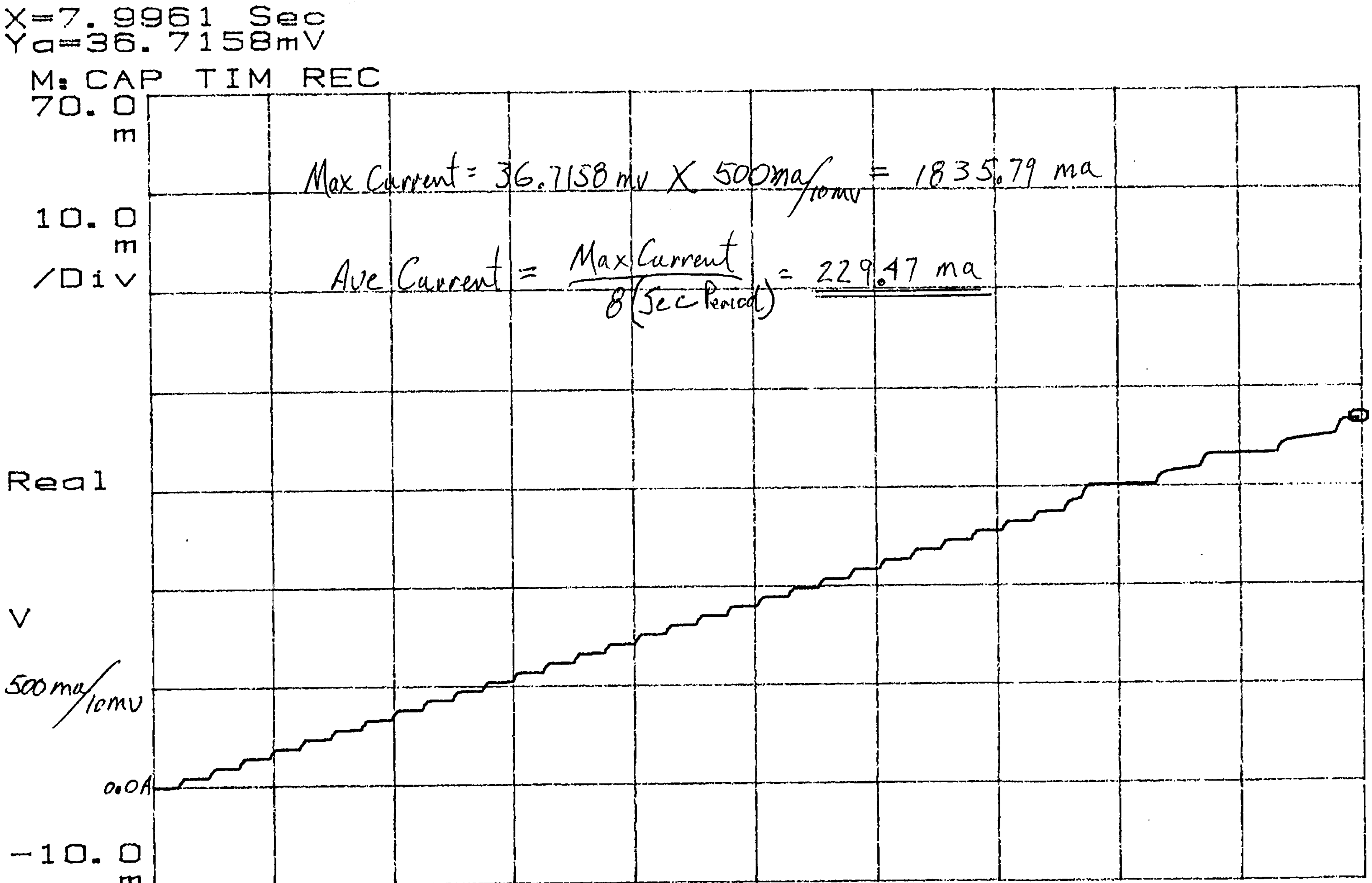
METSAT/AMSU A2 System CPT P/N IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ____

Shop Order: ~~375166~~ 584763 3-3-99 AMSU 8 SEIT S/N: 105

R. Haig 3-3-99
Test Systems Engineer Date

7A 262 3-4-99
Quality Control Date

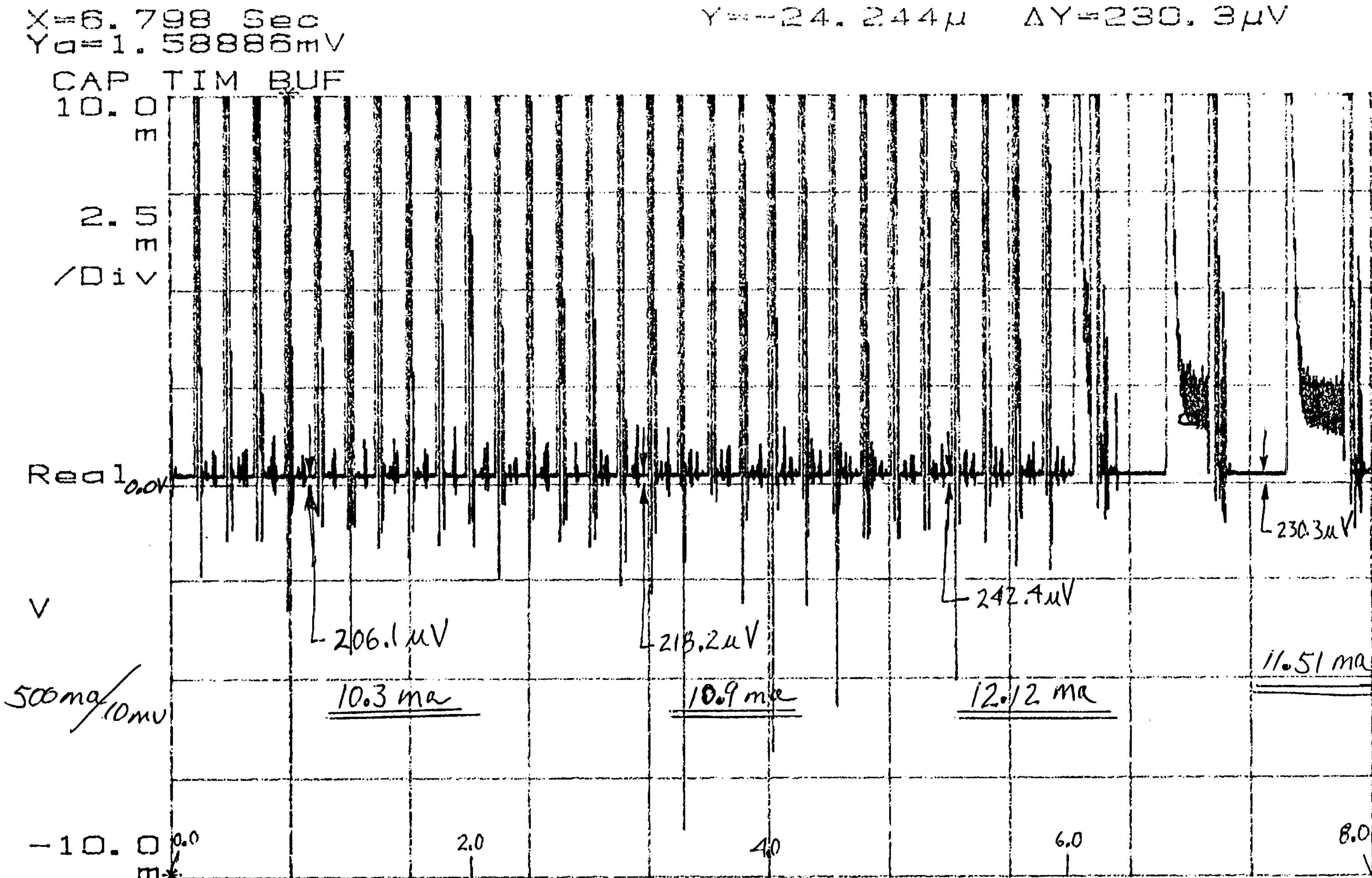
T. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)



324.2.2.5.

S/O: 584763 PLB 8 Second Integrated Current Measurement Test Eng: AMSU B SEIT Date: 3-3-99

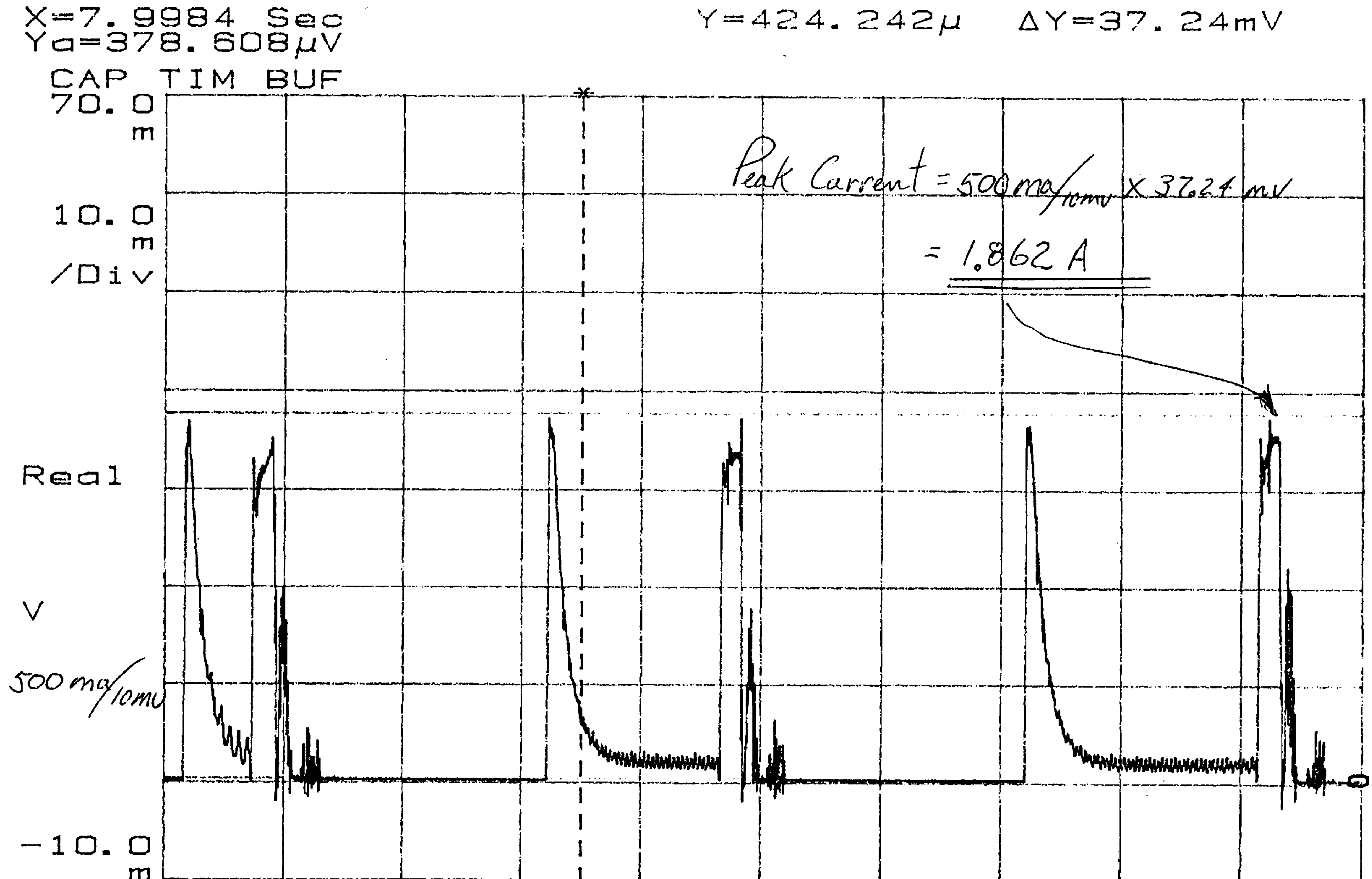
P/N: 133/200-2-TST SW: 105 TDS 4 Quality: 7A 262 3-4-99



3.2.4.2.2.1. thru 2.2.4

S/O: 584763 PLB Bus Current during VH.D Period Test Eng: AMSU B SEIT Date: 3-3-99

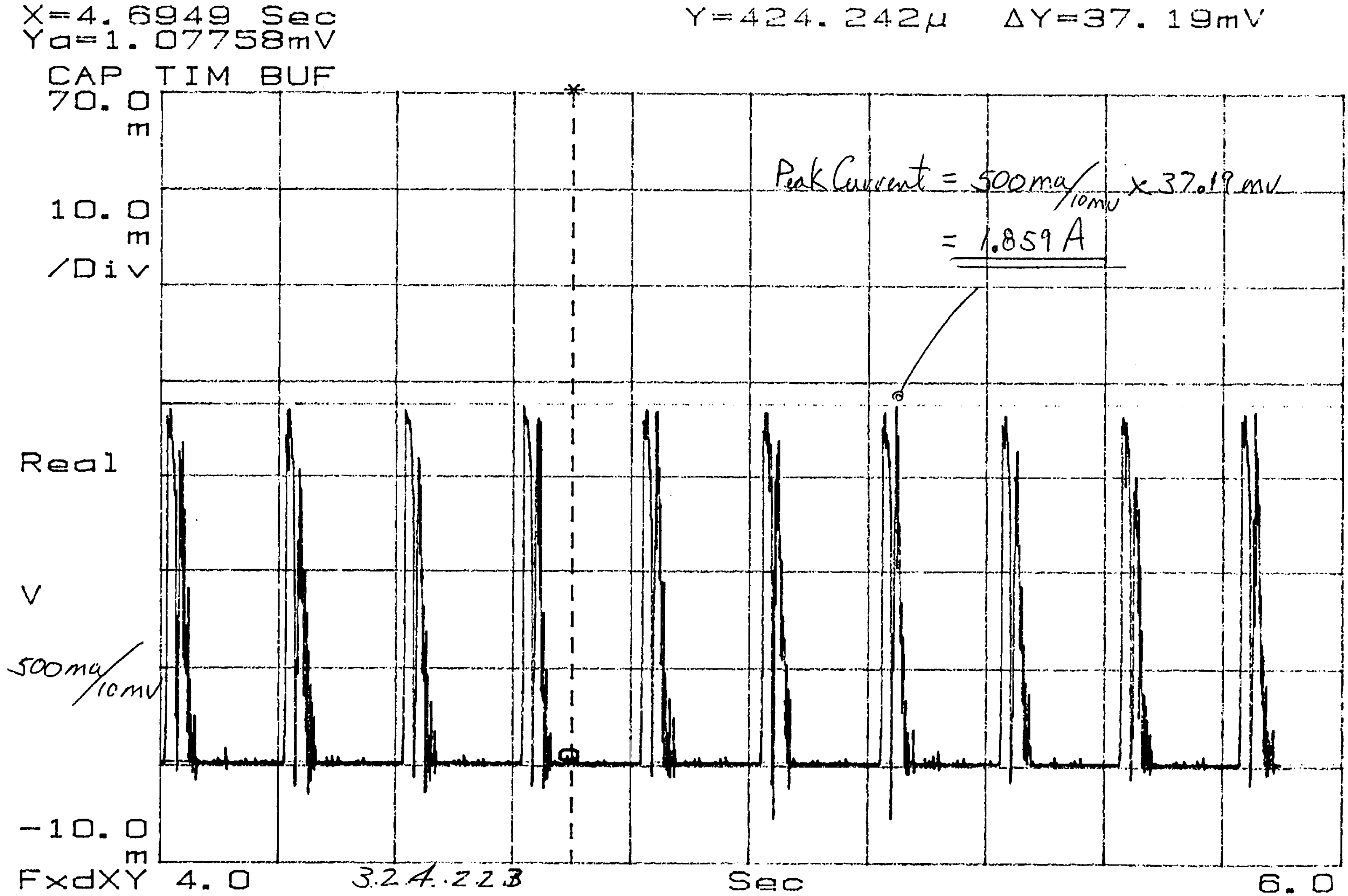
P/N: 133/200-2-TST SN: 105 TDS-4 Quality: 7A 262 3-4-99



3.2.4.2.2.4

S/O: 584763 PLB 4th two Seconds Test Eng: AMSU 8 Date: 3-3-99

P/N: 1331200-2-TST SN: 105 TDS 4 Quality: 7A 262 3-4-99



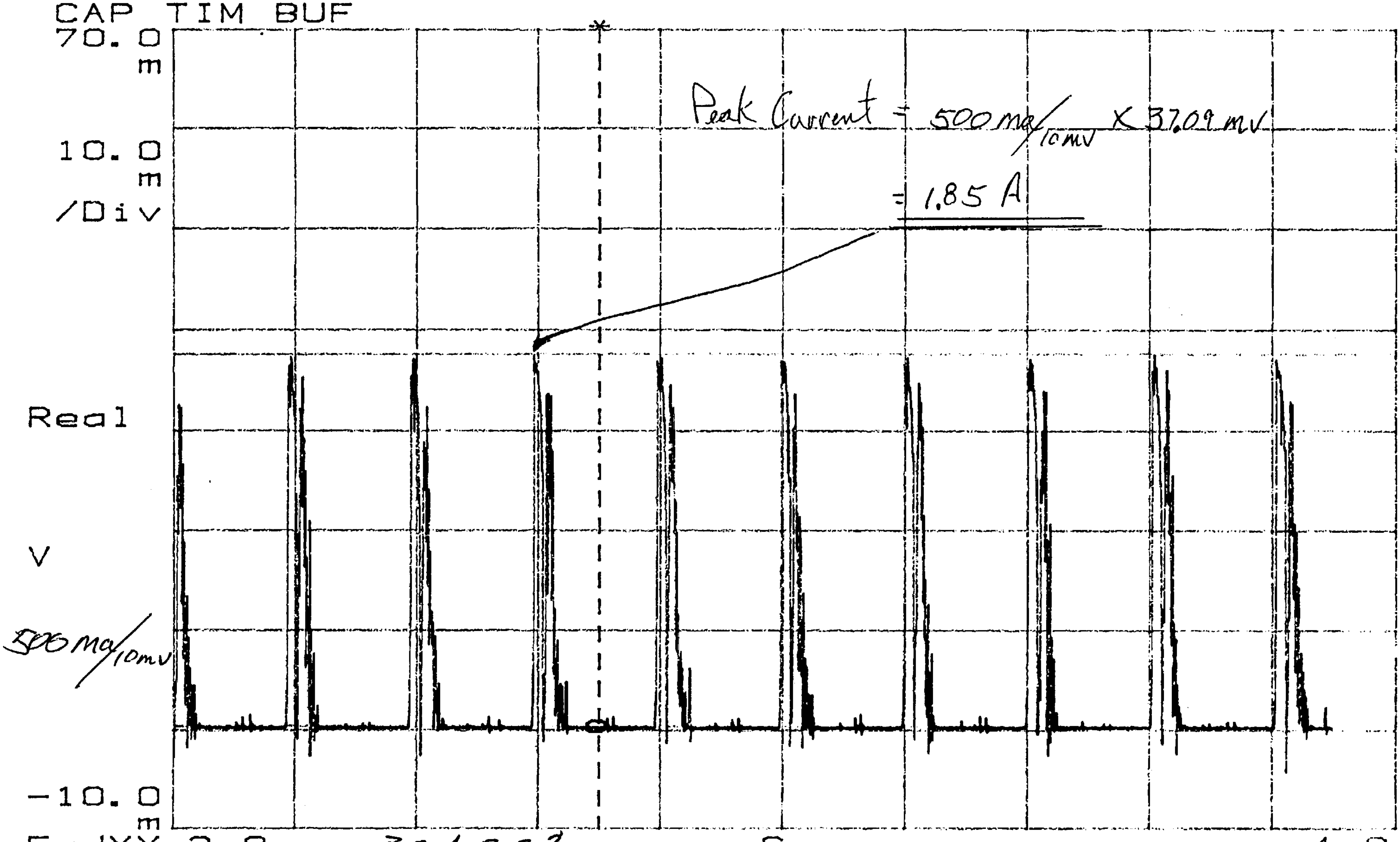
S/O: 584763 PLB 3rd two Seconds

P/N: 133/200-2-TST SN: 105 TDS '4

Test Eng: AMSU 8 SEIT Date: 3-3-99

Quality: 262 3-4-99

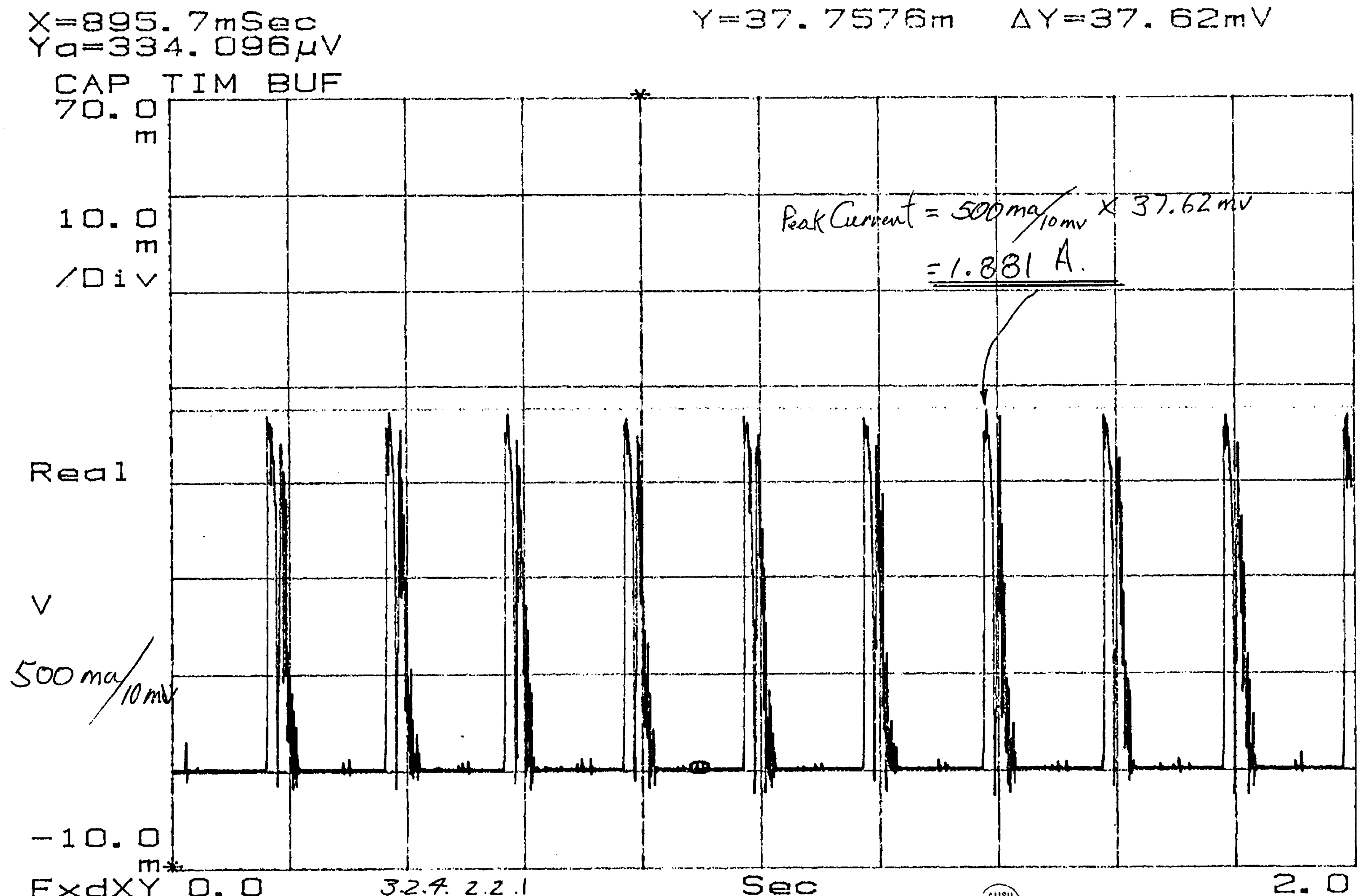
X=2.6957 Sec Y=424.242µ ΔY=37.09mV
Ya=333.304µV



3.2.4.2.2.2

S/O: 584763 PLB 2nd two Seconds Test Eng: AMSU 8 SEIT Date: 3-3-99

P/N: 1331200-2-TST SN: 105 TDS 4 Quality: 7A 262 3-4-99



3.2.4. 2.2.1

S/O: 584763 PLB First 2 Seconds. Test Eng: AMSU B TEST Date: 3-3-99

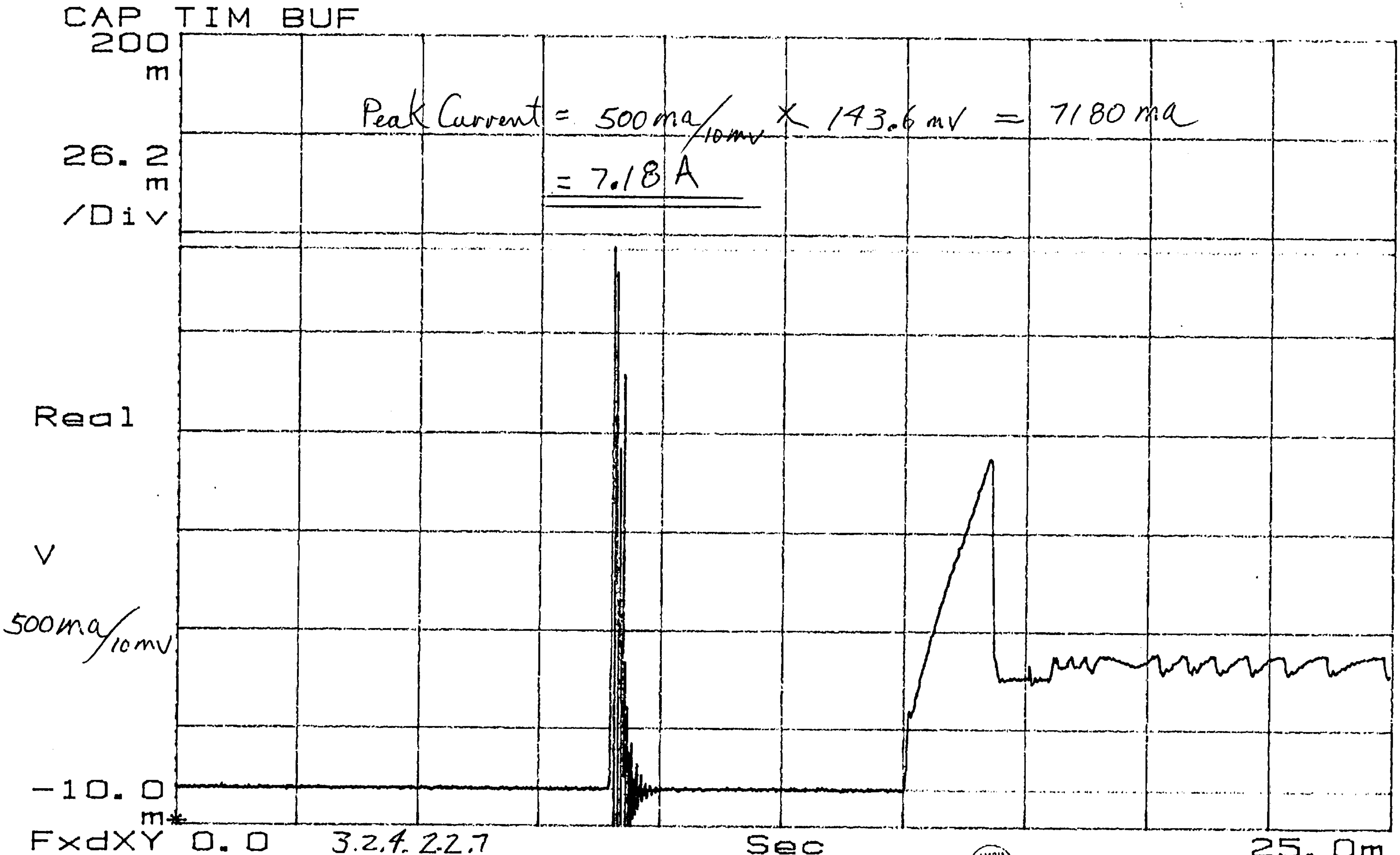
P/N: 1331200-2-TST SN: 105 TDS-4 Quality: QA 262 3-4-99

Time Capture

MEASURE:	CHAN 1		CHAN 2	
	Power Spec		Off	
WINDOW:	CHAN 1		CHAN 2	
	Hanning		Hanning	
AVERAGE:	TYPE	# AVGS	OVERLAP	TIME AVG
	Avg Off	10	0%	Off
FREQ:	CENTER		SPAN	BW
	10 kHz		20.0kHz	37.5 Hz
	REC LGTH	Δt		
	40.0mS	19.5μS		
TRIGGER:	TYPE	LEVEL	SLOPE	
	External	1.0 Vpk	Neg	
INPUT:	RANGE	ENG UNITS	COUPLING	DELAY
CH 1	1.0 Vpk	1.0 V/EU	DC (Gnd)	0.0 S
CH 2	1.0 Vpk	1.0 V/EU	DC (Gnd)	0.0 S
SOURCE:	TYPE		LEVEL	OFFSET
	Off		0.0 Vpk	0.0 Vpk

S/O: ~~58~~4763 324.22.7
P/N: 1331200-2-TST SN: 105
PLB TURN-ON TRANSIENT
DSA SET UP
Test Eng: AMSU 8 SEIT Date: 3-4-99
Quality: 7A 262 3-4-99

Y=143.618m   ΔY=143.6mV



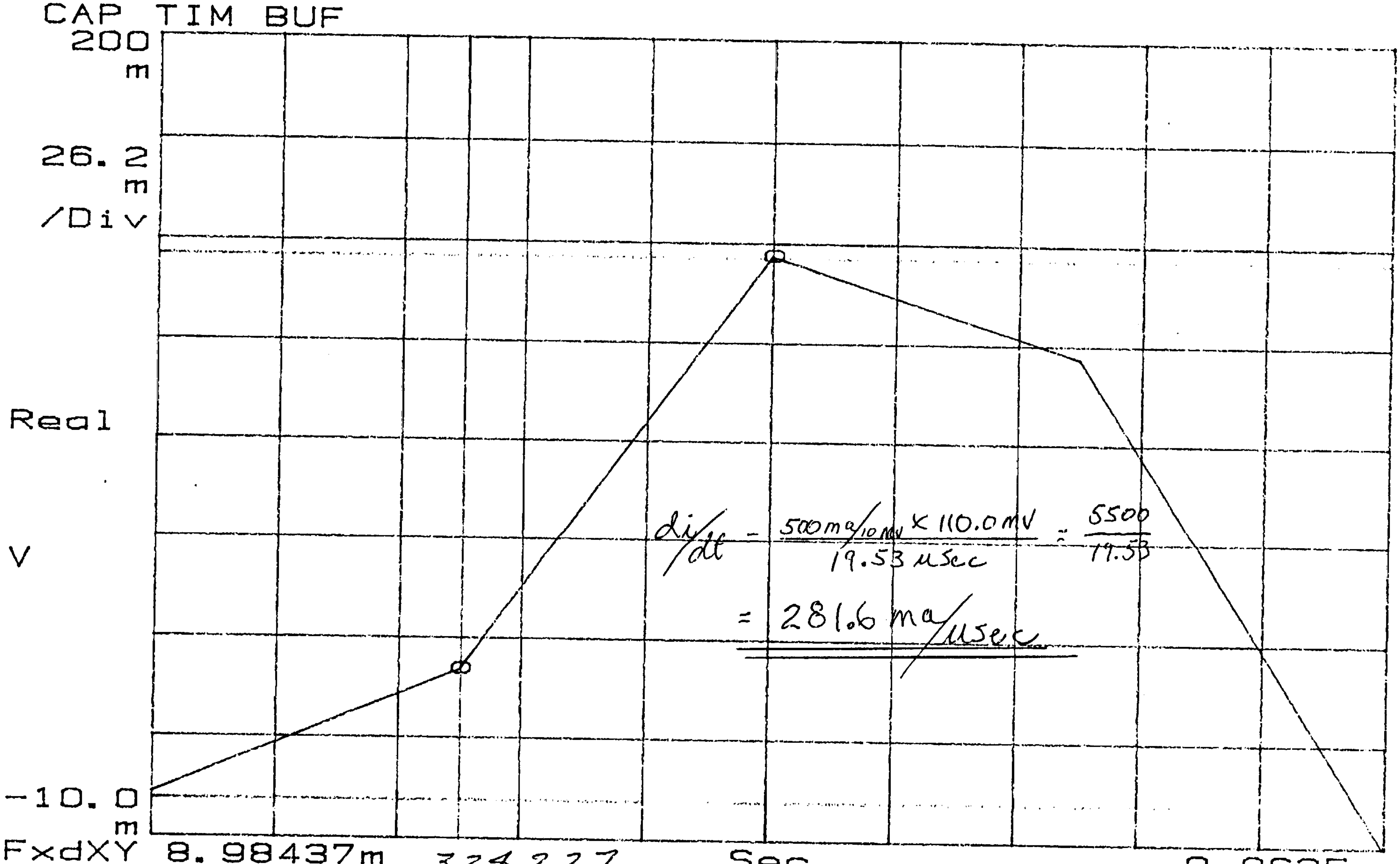
S/O: 584763   PLB TURN-ON TRANSIENT

P/N: 1331200-2-TST   SN: 105   TDS - 4

Test Eng: AMSU 8 SEIT   Date: 3-4-99

Quality: 7A 262 3-4-99

X=9.023mS ΔX=19.53μS Y=143.618m ΔY=143.7mV
Ya=144.218m ΔYa=110.0mV



$di/dt = \frac{500ma/10mV \times 110.0mV}{19.53\,\mu Sec} = \frac{5500}{19.53}$

$= 281.6\ ma/\mu sec$

324.2.2.7

PLB TURN-ON di/dt

TDS-4

S/O: 584763

P/N: 1331200-2-TST SN: 105

Test Eng: AMSU 8 SFIT Date: 3-4-99

Quality: 7A 262 3-4-99

TEST DATA SHEET 6
+10V Interface Bus Voltage (Paragraph 3.2.4.2.4)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	Av. Current (I_a)	8.42 mA	10 ma max	P
3	+10V Interface Bus (V_{ib}) (Measured)	8.97 Volts	9.0 ±1.0 V	P
4	+10 Interface Bus Power = I_a X V_{ib}	75.5 mW	100 mW max	P

584763 5-3-99 AMSU 8 SEIT 91 00

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 335166 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

R. Haig 3-3-99
Test Systems Engineer 7A 262 Date

F. Kolaczac 3-4-99 3-4-99
Customer Representative Date Quality Control Date
(Flight Hardware Only)

SHEET 103 OF ____
ECR NO. 1980

TEST DATA SHEET 7
1.248 MHz Clock Signal Verification (Paragraph 3.2.4.3.2.1)

1.248 CLOCK SIGNAL
ATTACH PHOTOGRAPH OR PLOT HERE

See Attached Plots

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
5	Clock Frequency	1.25 MHz	1.248 ±10%	P
	Clock Amplitude	8.4 Volts	9.0 ±1.0V	P

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT (Final CPT) Sub CPT ________

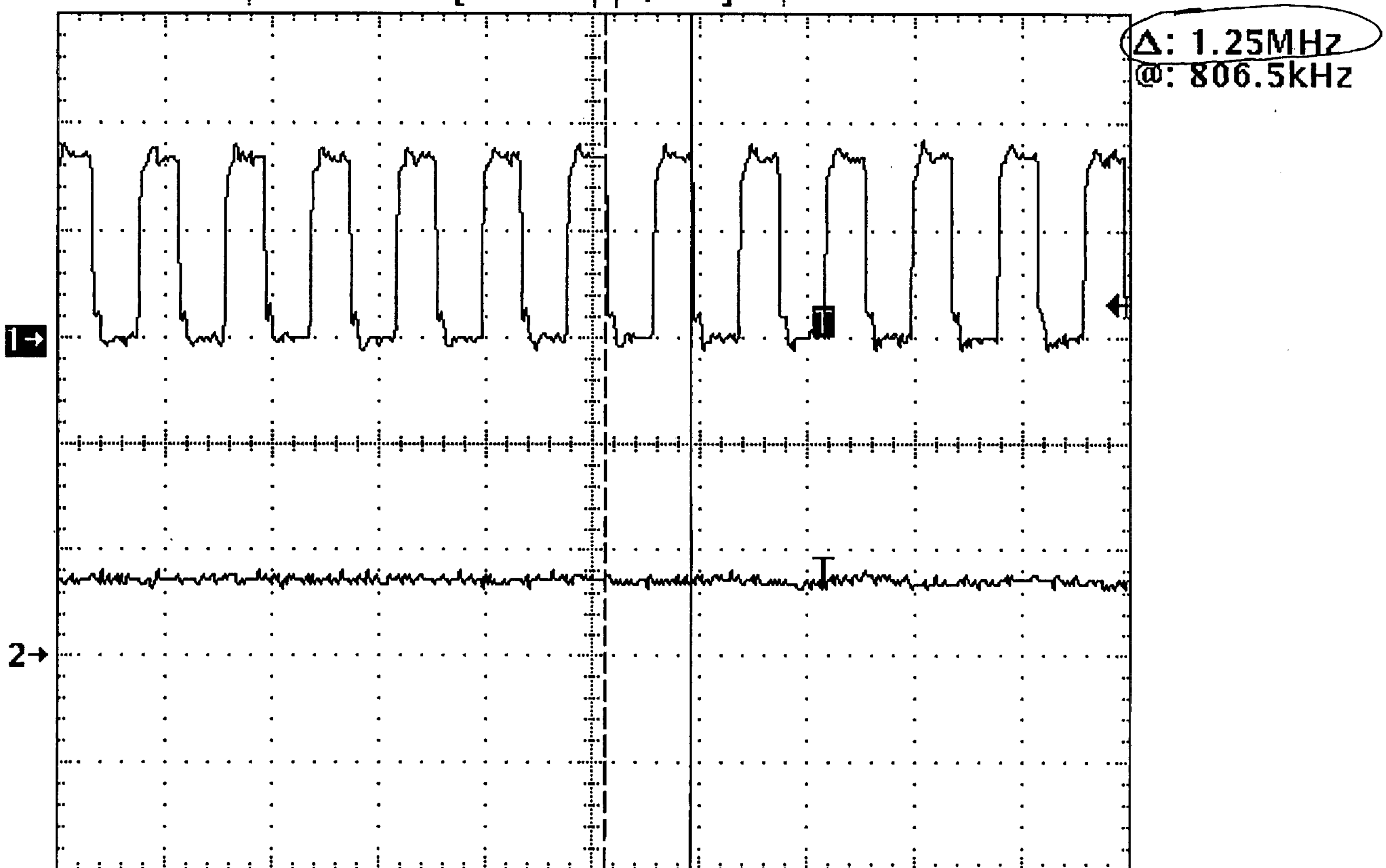
AMSU 8 SEIT

Customer Representative 3-4-99 Date
(Flight Hardware Only)

Test Systems Engineer 3-3-99 Date

Quality Control 7A 262 3-4-98 Date

Tek Run: 50MS/s Sample Trig'd



Ch1 5 V Ch2 5 V M 1µs Ch1 ∫ 1.6 V

3 Mar 1999
17:10:47

S/O: 58 47 63

P/N: 133/200-2-TST SN: 105

324321

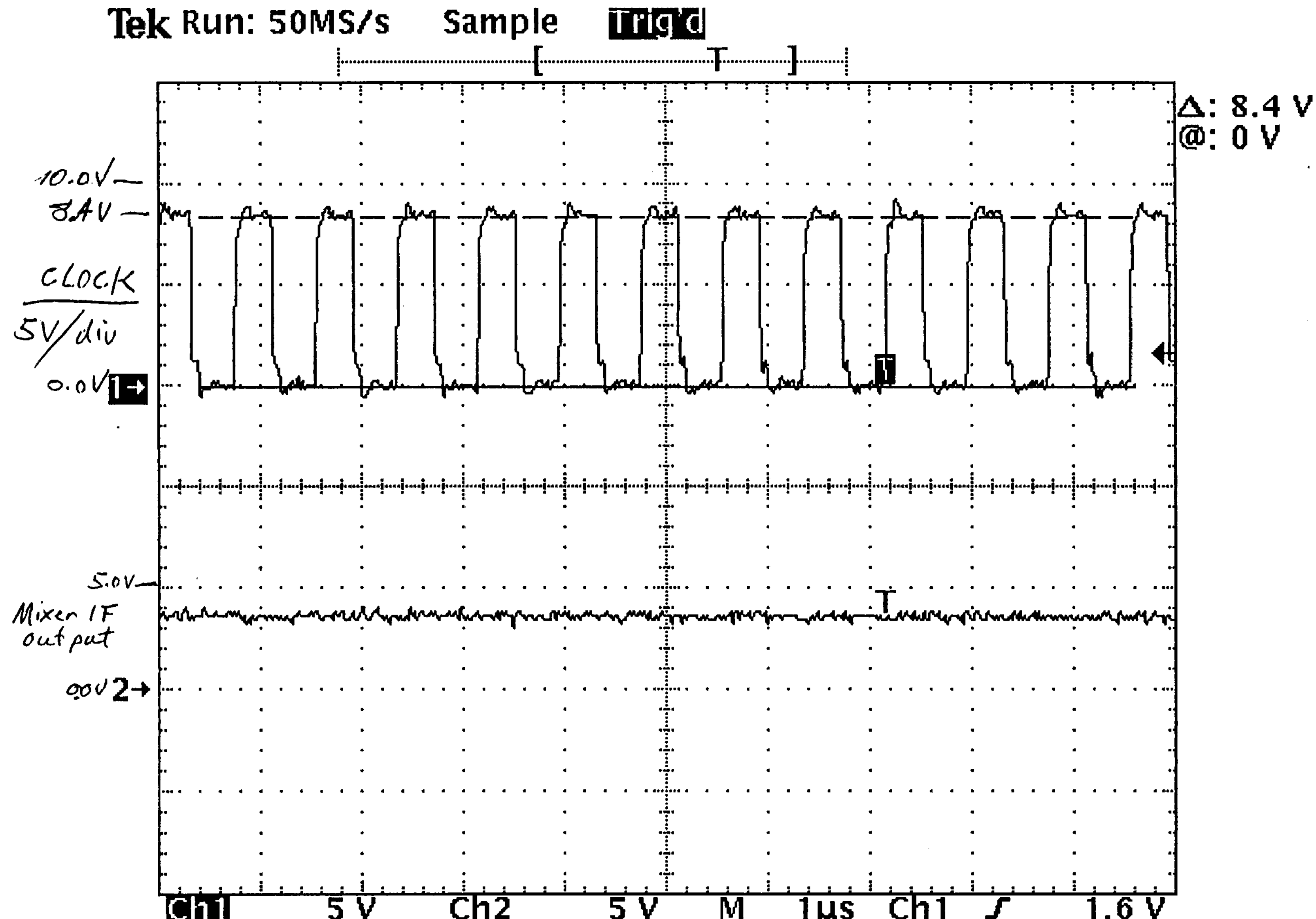
1.248 MHz Clock

TDS 7

Test Eng:

Date: 3-3-99

Quality: 3-4-99



3 Mar 1999
17:10:10

S/O: 584763
P/N: 1331200-2-1T SN: 105

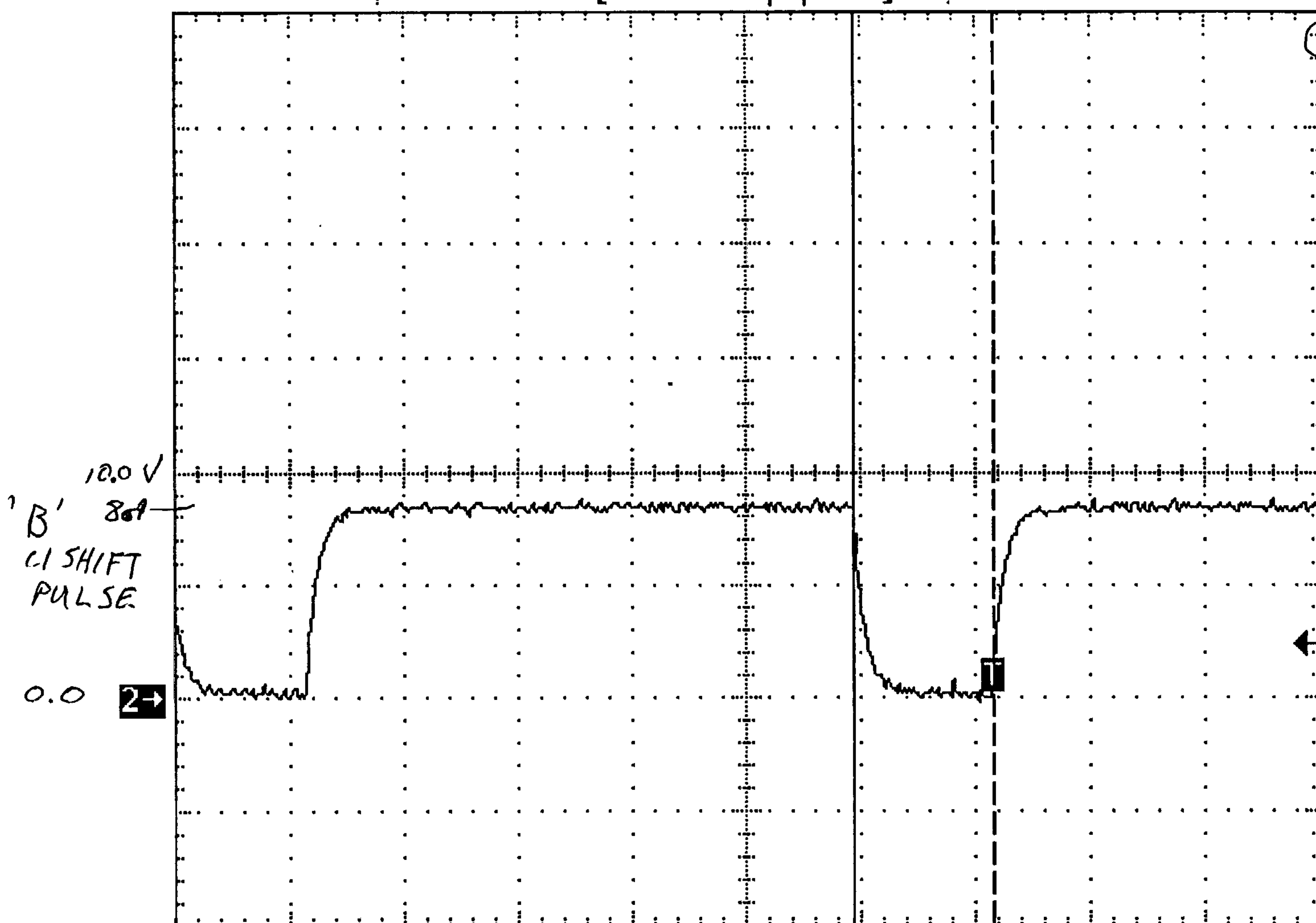
3.2.4.3.2.1
1.248 MHz Clock
TDS-7

Test Eng: AMSU 8 SEIT
Date: 3-3-99
Quality: A 262 3-4-99

Tek Run: 5MS/s Sample Trig'd

'B'

Δ: 12.2μs
@: −12.2μs



3 Mar 1999
17:40:47

S/O: 584763

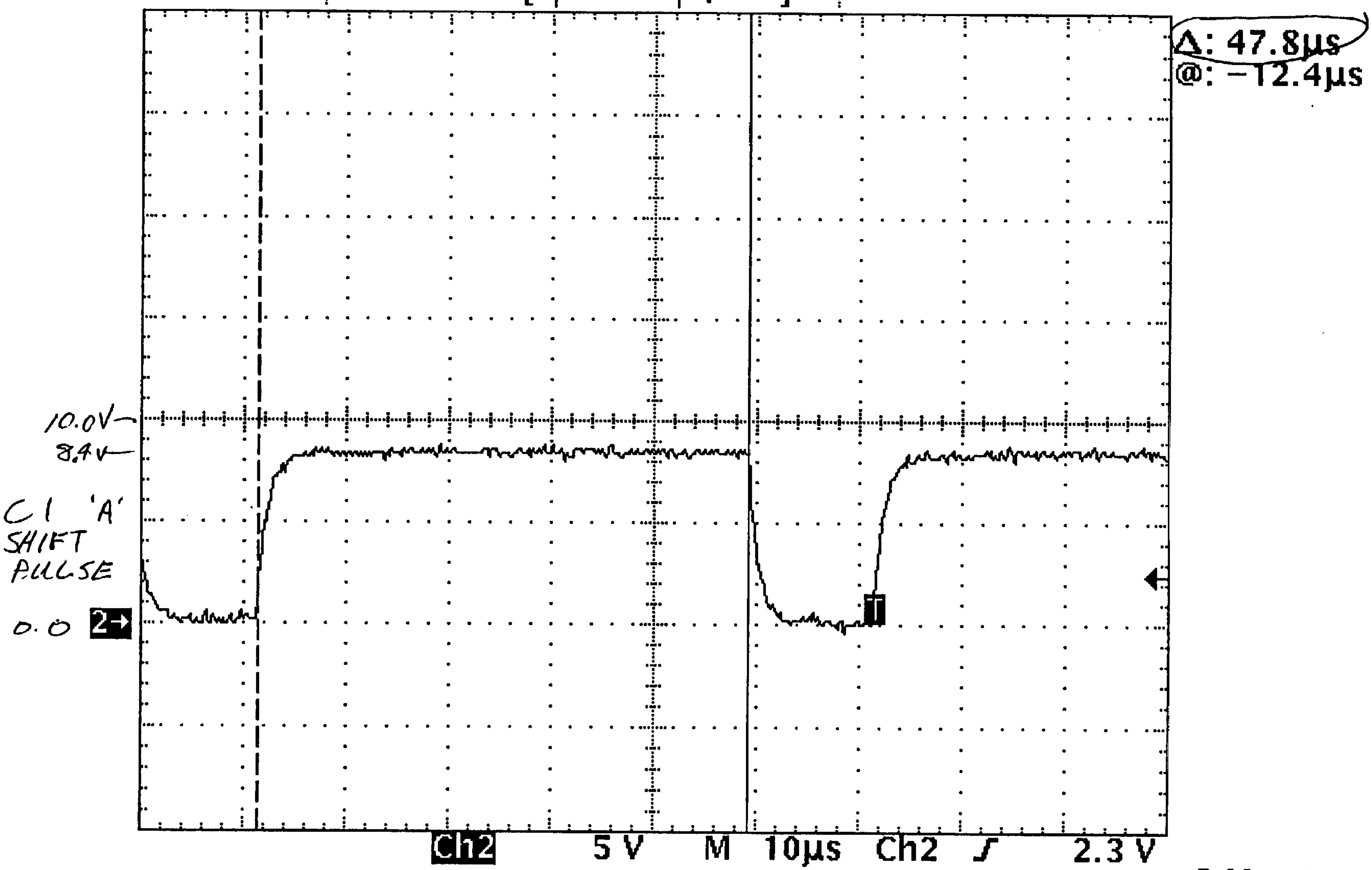
P/N: 133/200-2-TST SN: 105

3.2.4.3.2.2
'C1' SHIFT PULSE
TDS 8

Test Eng AMSU-B SEIT
Date: 3-3-99
Quality: 7A 262 3-4-99

Tek Run: 5MS/s Sample Trig'd

'A'



3 Mar 1999
17:35:44

S/o: 584763

3.2.4.3.2.2
'C1' SHIFT PULSE

A/N: 1331200-2-TST SN: 105

TDS 8

Test Eng: AMSU by SEIT
Date: 3-3-99
Quality: A 262 3-4-99

TEST DATA SHEET 8
"C1" Shift Pulse Verification (Paragraph 3.2.4.3.2.2)

"C1" SHIFT PULSE
ATTACH PHOTOGRAPH OR PLOT HERE

See Attached Plots

Parameter	Measured/ Calculated	Required	Pass/ Fail
Pulse Timing (A) *	47.8 µs	48 µs ± 10%	P
Pluse Timing (B) *	12.2 µs	12 µs ± 10%	P
Pulse Amplitude	8.4 Volts	9.0 ± 1.0V	P

* Refer to Figure 13 for location of the pulse timing A and B.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

AMSU 8 SEIT

3-3-99
Test Systems Engineer Date

A 262
3-4-99
Quality Control Date

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

SHEET 105 OF
ECR NO. 1980

TEST DATA SHEET 9
"A1" Select Pulse Verification (Paragraph 3.2.4.3.2.3)

"A1" SELECT PULSE
ATTACH PHOTOGRAPH OR PLOT HERE
See Attached Plot

Parameter	Measured/ Calculated	Required	Pass/ Fail
Select Pulse Timing (F) * 960	~~980~~ μs	961.5 μs± 10%	P
Select Pulse Amplitude	8.4 Volts	9.0 ±1.0V	P

* Refer to Figure 13 for location of the pulse timing F

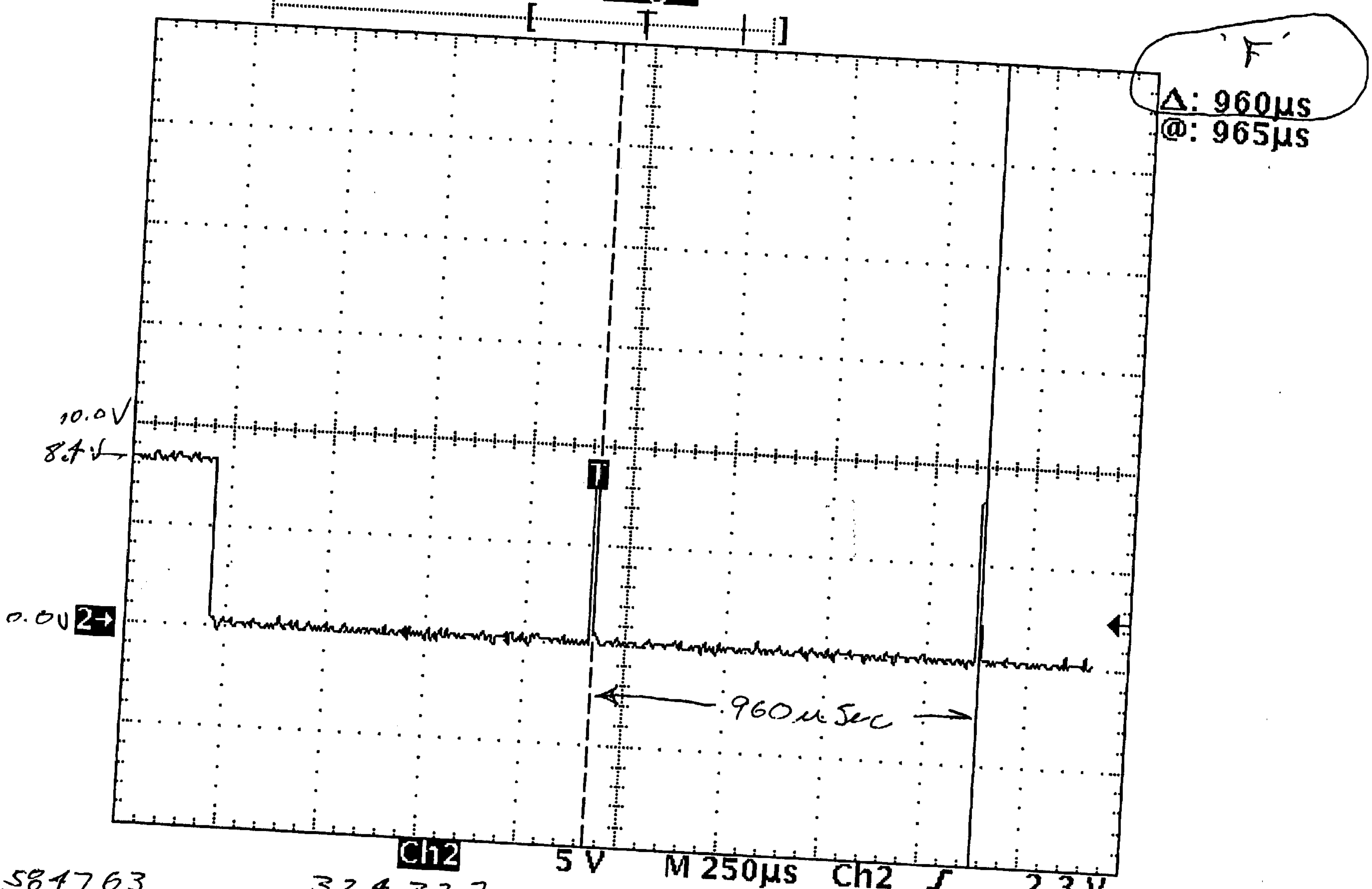
METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

Customer Representative 3-4-99 Date
(Flight Hardware Only)

Test Systems Engineer 3-3-99 Date

Quality Control 3-4-99 Date

Tek Run: 200kS/s Sample Trig'd



S/O: 584763
P/N: 1331200-2-TST SN: 105

3.2.4.3.2.3
'A1' SELECT PULSE
TDS 9

3 Mar 1999
17:49:49

Test Eng: ______
Date: 3-3-99
Quality: 3-4-99

TEST DATA SHEET 10

"8 Seconds" Frame Sync Pulse (Paragraph 3.2.4.3.2.4)

"8 SECONDS" FRAME SYNC PULSE
ATTACH PHOTOGRAPH OR PLOT HERE

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
1*	Frame Sync Pulse Timing	8.000412 Sec	8 Sec ±10%	P
	Frame Sync Pulse Timing (C)**	240.0 μs	240.4 μs ±10%	P
	Frame Sync Pulse Amplitude	8.1 Volts	9.0 ±1.0V	P

* Measure timing of 8-sec FSP by using HP 5316A Universal Counter.
** Refer to Figure 13 for location of the timing pulses for C.

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ______

AMSU 8 SEIT

Test Systems Engineer 3-3-99 Date

[signature] 3-4-99
Customer Representative Date
(Flight Hardware Only)

QA 262
Quality Control 3-4-99 Date

AE-26156/4C
17 Sep 98

SHEET 109 OF
ECR NO. 1980

TEST DATA SHEET 11 (Sheet 1 of 2)
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 8 seconds Frame sync pulse.

ATTACH PHOTOGRAPH OR PLOT HERE

See Attached Plot

Verify that the timing between H and I is as shown in Figure 13.

TIME MEASURED: 13.2 msec

TIME REQUIRED: 13.7 ms ±10%

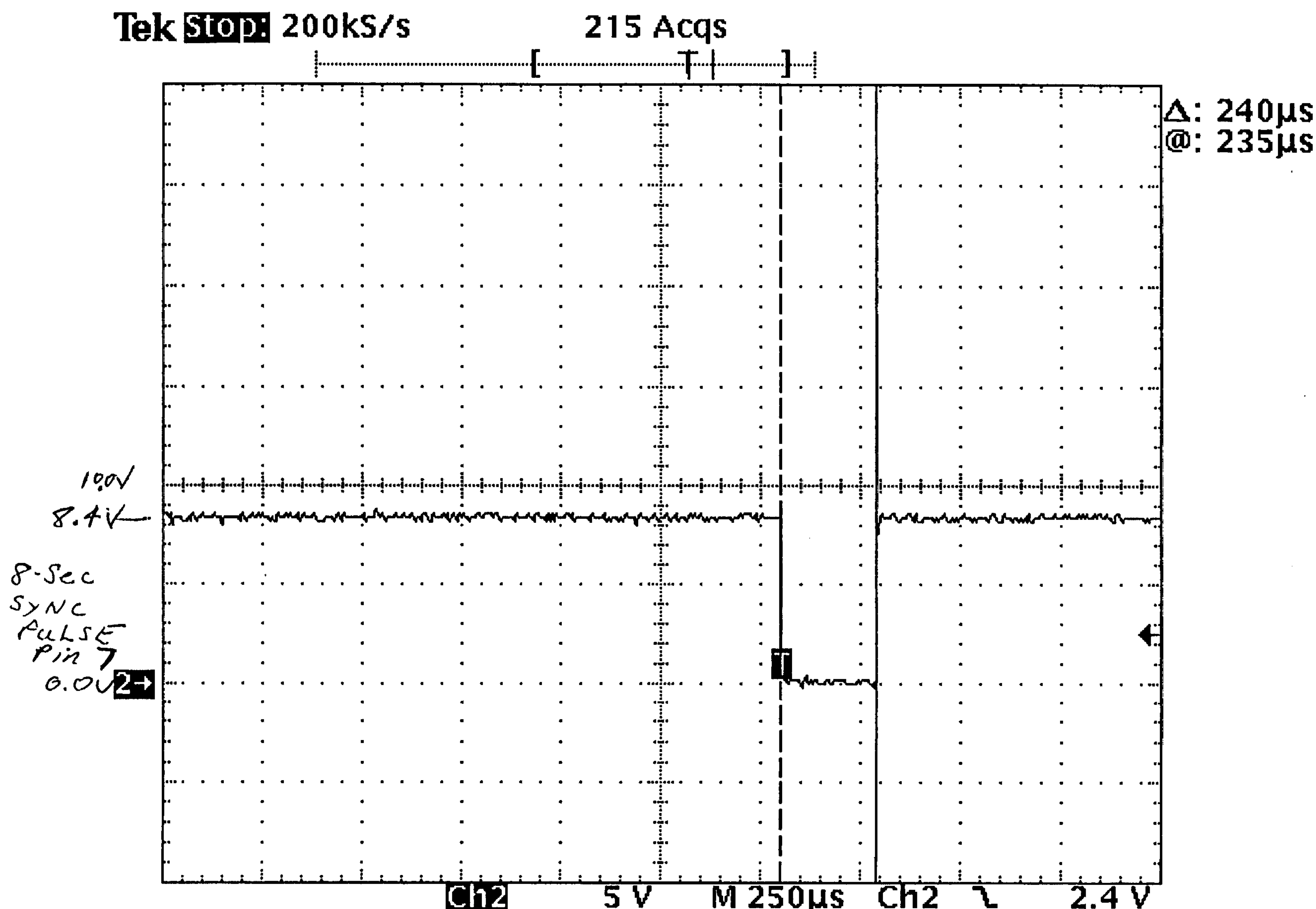
PASS/FAIL PASS

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

AMSU 8 SEIT

3-3-99
Test Systems Engineer Date

F. Galacgac 3-4-99 7A 262 3-4-99
Customer Representative Date Quality Control Date
(Flight Hardware Only)



3 Mar 1999
19:58:04

S/O: 584763 3.2.4.3.2.4

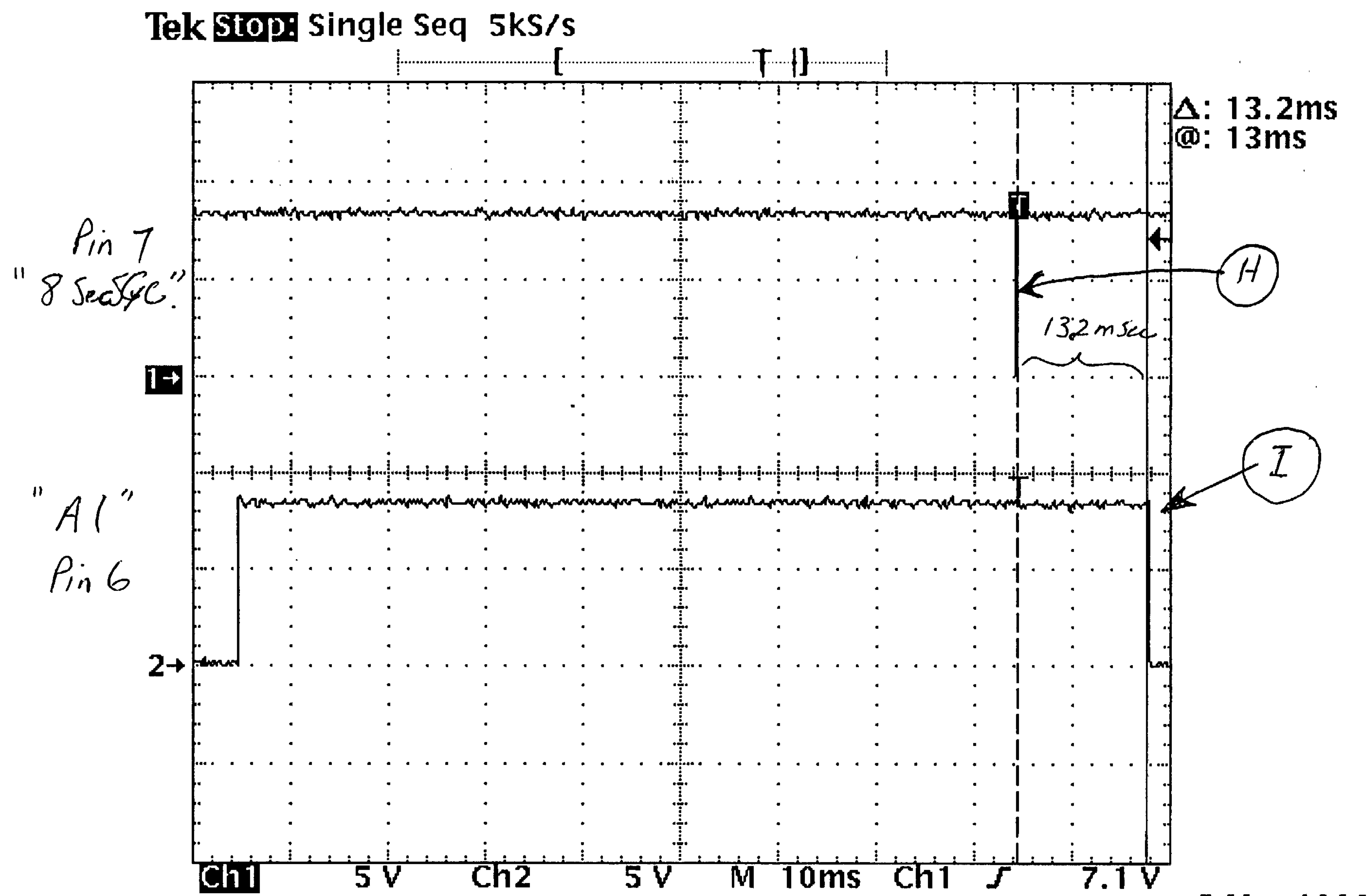
P/N: 1331200-2-TST SN: 105

8 SEC SYNC
TDS-10

Test Eng.: AMSU 8 SEIT

Date: 3-3-99

Quality: 7A 262 3-4-99



3.2.4. 3.2.5

SYCHRONIZATION SIGNALS "H" and "I"

W/O: 584763

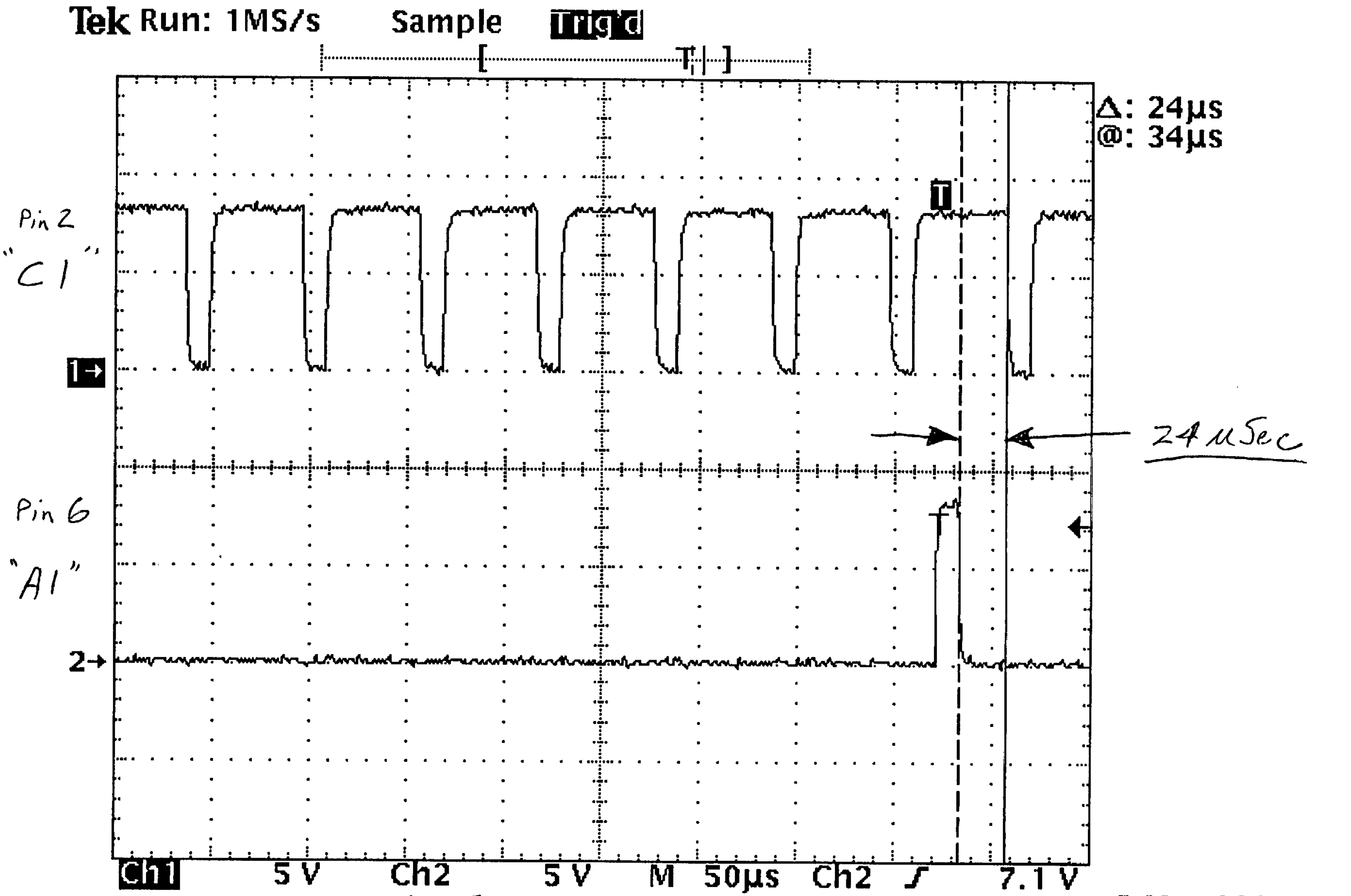
P/N: 1331200-2-TST SN: 105

TDS-11 SH 1

Test Eng: AMSU 8 SEIT

Date: 3-3-99

Quality: 7A 262 3-4-99



324.3.2.5
SYNC OF "A1" and "C1"
TDS - 11 Sh 2

S/O: 584763
P/N: 133/200-2-1TST SN: 105

3 Mar 1999
19:29:56

Test Eng: AMSU 8 SEIT
Date: 3-3-99
Quality: 7A 262 3-4-99

SHEET 108 OF ____
ECR NO. 1980

TEST DATA SHEET 11 (Sheet 2 of 2)
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the C1 Shift pulse.

ATTACH PHOTOGRAPH OR PLOT HERE
See Attached Plot

Verify that the timing between I and E is as shown in Figure 13.

TIME MEASURED: 24 uSec

TIME REQUIRED: 24 μs ±10%

PASS/FAIL PASS

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ____

Shop Order: 584763 S/N: 105

AMSU B SEIT

3-3-99
Test Systems Engineer Date

7A 262
3-4-99
Quality Control Date

F. Valaczac 3-4-99
Customer Representative Date
(Flight Hardware Only)

SHEET 109 OF ___
ECR NO. 1980

TEST DATA SHEET 12
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 1.248 MHz clock.

ATTACH PHOTOGRAPH OR PLOT HERE

See Attached Plot

Verify that the timing between I and J is as shown in Figure 13.

PASS/FAIL PASS

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

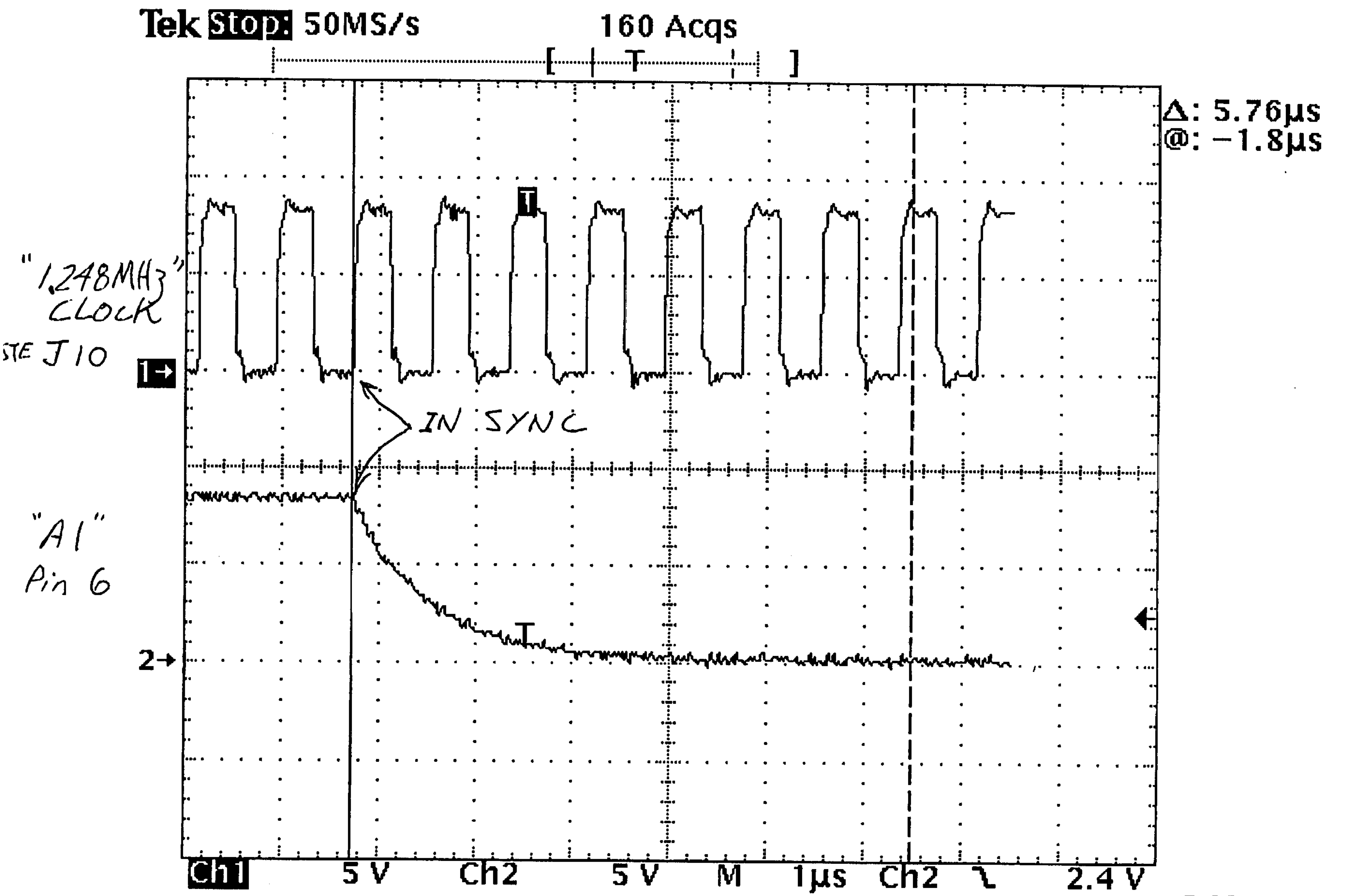
AMSU 8 SEIT

Test Systems Engineer 3-3-99 Date

7A 262

Quality Control 3-4-98 Date

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)



S/O: 584763

P/N: 1331200-2-TST SN: 105

3.2.4.3.2.5.

SYNC BETWEEN "CLOCK" & "A1"

TDS-12

Test Eng: AMSU B BEIT

Date: 3-3-99

Quality: 7A 262 3-4-99

TEST DATA SHEET 13
Commands and Digital-B Telemetry Verification (Paragraphs 3.2.4.3.3.1, 3.2.4.3.3.2, and 3.2.4.3.3.3)

Test	Digital-B Commands Verification Via STE			Visual Inspection		Pass/Fail
	Command	Observed	Required	Observed	Required	
3.2.4.3.3.1 Module Totally Off	Scanner A2	✓	OFF	✓	Antenna pointing to warm load.	P
	Module Power	✓	Disconnect	N/A	N/A	P
	Survival Htr. Power.	✓	OFF	✓	28V supply current=0	P
3.2.4.3.3.2 Survival Heater Power	Survival Heater ON	✓	ON	N/A	N/A	P
	Survival Heater OFF	✓	OFF	N/A	N/A	P
3.2.4.3.3.3 Module Power Connect	Module Power	✓	Connect	✓ 1.0	+28V DC current is between 0.5 and 3.2 amps.	P

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ~~335166~~ 584763 3-3-99 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

R. Haif 3-2-99
Test Systems Engineer Date

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

3-4-99
Quality Control Date

SHEET 111 OF
ECR NO. 1950

TEST DATA SHEET 14

Scanner Commands Verification (Paragraph 3.2.4.3.3.4, Step 1)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	P
	2 Survival Heater	✓	OFF	
	3 Scanner A2 Power	✓	ON	
	4 Compensator Motor Power	✓	ON	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	✓	NO	
	8 Antenna Full Scan	✓	YES	
	9 Cold MSB	✓	0	
	10 Cold LSB	✓	0	

564763 3-3-99

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ~~335166~~ S/N: 105

Circle Test: 1st CPT Final CPT Sub CPT ______

R. Haig 3-2-99
Test Systems Engineer Date

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

3-4-99
Quality Control Date

TEST DATA SHEET 15
Scanner Commands Verification (Paragraph 3.2.4.3.3.4, Step 2)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	P
	2 Survival Heater	✓	OFF	
	3 Scanner A2 Power	✓	OFF	
	4 Compensator Motor Power	✓	OFF	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	✓	NO	
	8 Antenna Full Scan	✓	YES	
	9 Cold MSB	✓	0	
	10 Cold LSB	✓	0	

METSAT/AMSU A2 System CPT P/N IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ______

Shop Order: ~~335166~~ 584763 3-3-99 QC 16 AMSU B SEIT
S/N: 105

R. Haig 3-2-99
Test Systems Engineer Date

7A 262 3-4-99
Quality Control Date

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

SHEET 113 OF ___
ECP NO. 1980

TEST DATA SHEET 16
Scanner Commands Verification (Paragraph 3.2.4.3.3.4, Step 3)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	P
	2 Survival Heater	✓	OFF	
	3 Scanner A2 Power	✓	ON	
	4 Compensator Motor Power	✓	ON	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	✓	NO	
	8 Antenna Full Scan	✓	YES	
	9 Cold MSB	✓	0	
	10 Cold LSB	✓	0	

QC 16 3-3-99
564763 AMSU 8 SEIT

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200 Shop Order: ~~33166~~ S/N: 105
Circle Test: 1st CPT **Final CPT** Sub CPT ___

R. Hart 3-2-99
Test Systems Engineer (262) Date

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

3-4-99
Quality Control Date

TEST DATA SHEET 17
Scanner Positions Commands (Paragraph 3.2.4.3.3.5)

Test	Digital "B" Verification				Pass/Fail
	Step/Description		Observed	Required	
Scanner Position Commands	1-Warm Cal.		✓	YES	P
	3-Cold Cal. Pos.	MSB	✓	0	
		LSB	✓	1	
	5-Cold Cal. Pos.	MSB	✓	1	
		LSB	✓	0	
	7-Cold Cal. Pos.	MSB	✓	1	
		LSB	✓	1	
	9-Cold Cal. Pos.	MSB	✓	0	
		LSB	✓	0	
	11-NADIR		✓	YES	
	13-Warm Cal		✓	YES	

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT (Final CPT) Sub CPT ________

Shop Order: ~~335166~~ 584763 5-3-99 S/N: 105

QC 16

R. Haid 3-2-99
Test Systems Engineer Date

3-4-99
Quality Control Date

J. Galaczar 3-4-99
Customer Representative Date
(Flight Hardware Only)

SHEET 115 OF
ECR NO. 1980

TEST DATA SHEET 18
Digital-A Data Output Full Scan Mode Synch Sequence, Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [III], and [III] (Paragraph 3.2.4.3.4.1)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	18	*	
[III]	0005	Digital B Data Byte 1	2	2	
	0006	Digital B Data Byte 2	6	6	
	0007	Digital B Data Byte 3	0	0	
	0008	Digital B Data Byte 4	0	0	

* AMSU A2 Identification Words (data entered in decimal system)

	Binary	Decimal
AMSU-A2 S/N 101	00000010	2
AMSU-A2 S/N 102	00000110	6
AMSU-A2 S/N 103	00001010	10
AMSU-A2 S/N 104	00001110	14
AMSU-A2 S/N 105	00010010	18
AMSU-A2 S/N 106	00010110	22
AMSU-A2 S/N 107	00011010	26
AMSU-A2 S/N 108	00011110	30
AMSU-A2 S/N 109	00100010	34

QC 16

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: ~~335766~~ 584763 3-3-99 S/N: 105

R. Hay 3-2-99
Test Systems Engineer Date

F. Galacgac 3-4-99
Customer Representative (Flight Hardware Only) Date

3-4-99
Quality Control Date

```
AMSU  A2-18 A2.EXE    FULL SCAN MODE        2-MAR-99  17:08:30  SCAN NUMBER    65
[ 5 ] DIGITAL A DATA  ELEMENT 0000
[ 6 ] DIGITAL B DATA  ELEMENT   00
[ 7 ] ANALOG DATA     ELEMENT   00

                                       COMMANDS
[ 9 ]  MODULE POWER =             CONNECT    ANTENNA IN COLD CAL POSIT = NO   [ 15 ]
[ 10 ] SURVIVAL HEATER POWER =        OFF    ANTENNA IN NADIR POSITION = NO   [ 16 ]
[ 11 ] MODULE TOTALLY OFF =           ON     ANTENNA IN FULL SCAN MODE = YES  [ 17 ]
[ 12 ] SCANNER A2 POWER =             ON     COLD CAL POSITION MSB =    ZERO  [ 18 ]
[ 13 ] COMPENSATOR MOTOR POWER =      ON     COLD CAL POSITION LSB =    ZERO  [ 19 ]
[ 14 ] ANTENNA IN WARM CAL POSIT = NO
          POWER [ 4 ]  ON
                       SCREEN ONLY [ 2 ]  PRINT  [ 3 ] FULL       [ 1 ] RETURN
 SELECT_TOUCHSCREEN_BUTTON 3
```

TDS 18

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	138	REFLECTOR POSITION 17	4228
2	SYNC SEQUENCE BYTE 2	11111111	140	REFL POS 17 2ND LOOK	4233
3	SYNC SEQUENCE BYTE 3	11111111	142	SCENE DATA BP 17 CH 1	16604
4	UNIT ID AND SERIAL NO	00010010	144	CH 2	16466
5	DIGITAL B DATA BYTE 1	00000010	146	REFLECTOR POSITION 18	4078
6	DIGITAL B DATA BYTE 2	00000110	148	REFL POS 18 2ND LOOK	4081
7	DIGITAL B DATA BYTE 3	00000000	150	SCENE DATA BP 18 CH 1	16602
8	DIGITAL B DATA BYTE 4	00000000	152	CH 2	16473
10	REFLECTOR POSITION 1	6655	154	REFLECTOR POSITION 19	3925
12	REFL POS 1 2ND LOOK	6654	156	REFL POS 19 2ND LOOK	3929
14	SCENE DATA BP 1 CH 1	16603	158	SCENE DATA BP 19 CH 1	16599
16	CH 2	16480	160	CH 2	16472
18	REFLECTOR POSITION 2	6505	162	REFLECTOR POSITION 20	3774
20	REFL POS 2 2ND LOOK	6507	164	REFL POS 20 2ND LOOK	3779
22	SCENE DATA BP 2 CH 1	16594	166	SCENE DATA BP 20 CH 1	16597
24	CH 2	16472	168	CH 2	16468
26	REFLECTOR POSITION 3	6351	170	REFLECTOR POSITION 21	3622
28	REFL POS 3 2ND LOOK	6355	172	REFL POS 21 2ND LOOK	3627
30	SCENE DATA BP 3 CH 1	16609	174	SCENE DATA BP 21 CH 1	16600
32	CH 2	16472	176	CH 2	16470
34	REFLECTOR POSITION 4	6200	178	REFLECTOR POSITION 22	3471
36	REFL POS 4 2ND LOOK	6204	180	REFL POS 22 2ND LOOK	3476
38	SCENE DATA BP 4 CH 1	16605	182	SCENE DATA BP 22 CH 1	16595
40	CH 2	16473	184	CH 2	16467
42	REFLECTOR POSITION 5	6050	186	REFLECTOR POSITION 23	3321
44	REFL POS 5 2ND LOOK	6052	188	REFL POS 23 2ND LOOK	3324
46	SCENE DATA BP 5 CH 1	16599	190	SCENE DATA BP 23 CH 1	16597
48	CH 2	16467	192	CH 2	16469
50	REFLECTOR POSITION 6	5898	194	REFLECTOR POSITION 24	3168
52	REFL POS 6 2ND LOOK	5900	196	REFL POS 24 2ND LOOK	3172
54	SCENE DATA BP 6 CH 1	16604	198	SCENE DATA BP 24 CH 1	16600
56	CH 2	16477	200	CH 2	16470
58	REFLECTOR POSITION 7	5747	202	REFLECTOR POSITION 25	3017
60	REFL POS 7 2ND LOOK	5749	204	REFL POS 25 2ND LOOK	3021
62	SCENE DATA BP 7 CH 1	16598	206	SCENE DATA BP 25 CH 1	16596
64	CH 2	16473	208	CH 2	16466
66	REFLECTOR POSITION 8	5594	210	REFLECTOR POSITION 26	2864
68	REFL POS 8 2ND LOOK	5597	212	REFL POS 26 2ND LOOK	2868
70	SCENE DATA BP 8 CH 1	16600	214	SCENE DATA BP 26 CH 1	16598
72	CH 2	16470	216	CH 2	16466
74	REFLECTOR POSITION 9	5441	218	REFLECTOR POSITION 27	2712
76	REFL POS 9 2ND LOOK	5445	220	REFL POS 27 2ND LOOK	2717
78	SCENE DATA BP 9 CH 1	16599	222	SCENE DATA BP 27 CH 1	16601
80	CH 2	16467	224	CH 2	16467
82	REFLECTOR POSITION 10	5290	226	REFLECTOR POSITION 28	2560
84	REFL POS 10 2ND LOOK	5293	228	REFL POS 28 2ND LOOK	2565
86	SCENE DATA BP 10 CH 1	16600	230	SCENE DATA BP 28 CH 1	16601
88	CH 2	16466	232	CH 2	16472
90	REFLECTOR POSITION 11	5139	234	REFLECTOR POSITION 29	2410
92	REFL POS 11 2ND LOOK	5142	236	REFL POS 29 2ND LOOK	2413

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94	SCENE DATA BP 11 CH 1	16599	238	SCENE DATA BP 29 CH 1	16603
96	CH 2	16471	240	CH 2	16474
98	REFLECTOR POSITION 12	4987	242	REFLECTOR POSITION 30	2256
100	REFL POS 12 2ND LOOK	4991	244	REFL POS 30 2ND LOOK	2262
102	SCENE DATA BP 12 CH 1	16600	246	SCENE DATA BP 30 CH 1	16599
104	CH 2	16469	248	CH 2	16467
106	REFLECTOR POSITION 13	4835	250	REFLECTOR COLD CAL POS	665
108	REFL POS 13 2ND LOOK	4839	252	REFL COLD CAL 2ND LOOK	665
110	SCENE DATA BP 13 CH 1	16596	254	COLD CAL DATA 1 CH 1	16596
112	CH 2	16468	256	CH 2	16464
114	REFLECTOR POSITION 14	4686	258	COLD CAL DATA 2 CH 1	16596
116	REFL POS 14 2ND LOOK	4688	260	CH 2	16465
118	SCENE DATA BP 14 CH 1	16605	302	REFLECTOR WARM CAL POS	12650
120	CH 2	16480	304	REFL WARM CAL 2ND LOOK	12650
122	REFLECTOR POSITION 15	4533	306	WARM CAL DATA 1 CH 1	16586
124	REFL POS 15 2ND LOOK	4536	308	CH 2	16458
126	SCENE DATA BP 15 CH 1	16607	310	WARM CAL DATA 2 CH 1	16585
128	CH 2	16479	312	CH 2	16458
130	REFLECTOR POSITION 16	4382			
132	REFL POS 16 2ND LOOK	4384			
134	SCENE DATA BP 16 CH 1	16598			
136	CH 2	16478			

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE DEG C
262	SCAN MOTOR	16790	20.96
264	FEED HORN	17351	21.83
266	RF MUX	17493	22.16
268	MIXER/IF AMPLIFIER CHANNEL 1	17531	22.42
270	MIXER/IF AMPLIFIER CHANNEL 2	17602	22.66
272	LOCAL OSCILLATOR CHANNEL 1	17324	21.83
274	LOCAL OSCILLATOR CHANNEL 2	17830	22.84
276	COMPENSATION MOTOR	16851	20.69
278	SUB REFLECTOR	17428	22.25
280	DC/DC CONVERTER	17732	22.71
282	RF SHELF	17073	21.52
284	DETECTOR/PREAMP ASSEMBLY	17434	22.25
286	WARM LOAD CENTER	22112	20.97
288	WARM LOAD 1	22207	21.07
290	WARM LOAD 2	22106	20.93
292	WARM LOAD 3	22006	21.19
294	WARM LOAD 4	22089	20.77
296	WARM LOAD 5	22161	20.93
298	WARM LOAD 6	22487	20.89
300	TEMP SENSOR REFERENCE VOLTAGE	24998	

DESCRIPTION	STATUS	STATUS	STATUS
SCANNER POWER	ON	ON	ON
COMPENSATOR MOTOR POWER	ON	ON	ON
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	NO	NO	NO
ANTENNA IN NADIR POSITION MODE	NO	NO	NO
ANTENNA IN FULL SCAN MODE	YES	YES	YES
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	ON	ON	ON
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
RF SHELF TEMPERATURE	216	20.7	216	20.7	216	20.7
COMPENSATOR MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
SCANNER MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
WARM LOAD TEMPERATURE	216	20.7	216	20.7	216	20.7

DESCRIPTION	VALUE	MA / VOLTS	VALUE	MA / VOLTS	VALUE	MA / VOLTS
ANTENNA DRIVE MOTOR CURRENT (AVERAGE)	104	56.78	104	56.78	104	56.78
COMPENSATOR MOTOR CURRENT (AVERAGE)	99	54.05	99	54.05	99	54.05
SIGNAL PROCESSING +15 VDC	172	15.00	172	15.00	172	15.00
ANTENNA DRIVE +15 VDC	173	14.65	173	14.65	173	14.65
SIGNAL PROCESSING -15 VDC	149	-14.97	149	-14.97	149	-14.97
ANTENNA DRIVE -15 VDC	150	-14.64	150	-14.64	150	-14.64
RECEIVER +10 VDC	173	10.00	173	10.00	173	10.00
RADIOMETER, RECEIVER, PROCESSOR +5 VDC	148	5.00	148	5.00	148	5.00
ANTENNA DRIVE +5 VDC	148	5.01	149	5.04	148	5.01
GUNN DIODE OSC #1 (CHANNEL 1) VDC	175	10.06	175	10.06	175	10.06
GUNN DIODE OSC #2 (CHANNEL 2) VDC	174	9.94	174	9.94	174	9.94

PRT TEMPERATURES

	NO.	DEG K	NO.	DEG K
VARIABLE TARGET	601	14.00	607	20.00
	602	15.00	608	21.00
	603	16.00	609	22.00
	604	17.00	610	23.00
	605	18.00	611	24.00
	606	19.00		
FIXED TARGET	612	39.00	618	45.00
	613	40.00	619	46.00
	614	41.00	620	47.00
	615	42.00	621	48.00
	616	43.00	622	49.00
	617	44.00		
BASEPLATE	623	25.00	625	50.00
	624	26.00	626	27.00

THERMOCOUPLE TEMPERATURES

	NO.	DEG K	NO.	DEG K
FIXED TARGET SHROUD	532	32.00	533	33.00
VARIABLE TARGET SHROUD	515	7.00	516	8.00
FIXED TARGET N2	502	30.00	503	31.00
VARIABLE TARGET N2	507	5.00	508	6.00
HEATER N2	505	1.00	506	2.00
FIXED TARGET FLOW METER	504	34.00		
VARIABLE TARGET FLOW METER	509	9.00		
BASEPLATE HEATER N2	510	3.00	511	4.00
BASEPLATE N2	512	36.00	513	37.00
BASEPLATE FLOW METER	514	35.00		
ADJUNCT RADIATORS	549	38.00	554	55.00
	542	10.00	556	57.00

TEST DATA SHEET 19
Reflector Positions Section [IV] (Paragraph 3.2.4.3.4.1)

BP	A2 Reflector		
	Position*	Required**	Pass/Fail
01			P
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
CC ~~CL~~			
WC ~~WL~~			

11/23/98

QC 223

AMSU 2 SEIT

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required position data from TDS 6 of AE-26002/2 ±5 counts.

QC 16

AMSU 8 SEIT 3-3-99

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200 Shop Order: 584763 ~~33166~~ S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

R. Haif 3-2-99
Test Systems Engineer Date

V. Kalaczac 3-4-99 (TA 262) 3-4-99
Customer Representative Date Quality Control Date
(Flight Hardware Only)

SHEET 19 OF ____
ECR NO. 1980

TEST DATA SHEET 20
Digital-A Data Output Radiometer Data Section [V] (Paragraph 3.2.4.3.4.1)

BP	Channel-1 (23.8 GHz)			Channel-2 (31.4 GHz)		
	Measured*	Required**	Pass/Fail	Measured*	Required**	Pass/Fail
01			P			P
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
CC						
~~WH~~						

QC 223

AMSU 2 SEIT

11/bq WK

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required = 16,500 ± 4000 counts.

5-3-99 584763 8 SEIT QC 16

METSAT/AMSU A2 System ~~CPT~~ ~~P/N~~ IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: 33166 S/N: 105

R. Heid 3-2-99
Test Systems Engineer Date

7A 262 3-4-99
Quality Control Date

3-4-99
Customer Representative Date
(Flight Hardware Only)

TEST DATA SHEET 21

Full Scan Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.1)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
0262	Scan Motor	21.03	25 ± 15	P
0264	Feedhorn	21.94	25 ± 15	
0266	RF Mux	22.36	25 ± 15	
0268	Mixer I.F. Amp. Channel 1	22.66	25 ± 15	
0270	Mixer I.F. Amp. Channel 2	22.93	25 ± 15	
0272	Local Oscillator Channel 1	22.05	25 ± 15	
0274	Local Oscillator Channel 2	23.14	25 ± 15	
0276	Compensation Motor	20.81	25 ± 15	
0278	Subreflector	22.26	25 ± 15	
0280	DC/DC Converter	23.30	25 ± 15	
0282	RF Shelf	21.68	25 ± 15	
0284	Detector/Preamp Assembly	22.44	25 ± 15	
0286	Warm Load Center	20.96	25 ± 15	
0288	Warm Load 1	21.08	25 ± 15	
0290	Warm Load 2	20.89	25 ± 15	
0292	Warm Load 3	21.18	25 ± 15	
0294	Warm Load 4	20.75	25 ± 15	
0296	Warm Load 5	20.91	25 ± 15	
0298	Warm Load 6	20.92	25 ± 15	
0300	Temp Sensor V. Reference	25000	**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** Count of 24,552 +1765, -1308.

QC 16 5-3-99

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Shop Order: 584763 ~~535166~~
S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

R. Haid 3-2-99
Test Systems Engineer Date

T. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

7A 262 3-4-99
Quality Control Date

SHEET 119 OF
SCR NO. 1980

TEST DATA SHEET 22
Digital-A Data Output Warm Cal Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	18	*	
[III]	0005	Digital B Data Byte 1	4	4	
	0006	Digital B Data Byte 2	6	6	
	0007	Digital B Data Byte 3	0	0	
	0008	Digital B Data Byte 4	0	0	

* AMSU A2 Identification Words (data entered in decimal system)

	Binary	Decimal
AMSU-A2 S/N 101	00000010	2
AMSU-A2 S/N 102	00000110	6
AMSU-A2 S/N 103	00001010	10
AMSU-A2 S/N 104	00001110	14
AMSU-A2 S/N 105	00010010	18
AMSU-A2 S/N 106	00010110	22
AMSU-A2 S/N 107	00011010	26
AMSU-A2 S/N 108	00011110	30
AMSU-A2 S/N 109	00100010	34

QC 16

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ______

Shop Order: 584763 ~~335166~~ 3-3-99
S/N: 105

R. Heid 3-2-99
Test Systems Engineer Date

T. Galaczec 3-4-99
Customer Representative Date
(Flight Hardware Only)

3-4-99
Quality Control Date

A[illegible] A2-18 A2.EXE FULL SCAN MODE 2-MAR-99 17:11:54 SCAN NUMBER 91

[[illegible]] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 1

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16573	9	16574	17	16576	25	16573
2	16575	10	16573	18	16571	26	16570
3	16575	11	16573	19	16574	27	16573
4	16579	12	16576	20	16576	28	16573
5	16574	13	16575	21	16573	29	16577
6	16570	14	16581	22	16572	30	16574
7	16572	15	16579	23	16565	CC	16572
8	16578	16	16573	24	16574	WC	16558

[21] UP [22] DOWN

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT_TOUCHSCREEN_BUTTON 2

TDS 20

AMSU 'A2-18 A2.EXE   FULL SCAN MODE   2-MAR-99 17:11:26 SCAN NUMBER 87

[5] DIGITAL A DATA   ELEMENT 0000

[6] DIGITAL B DATA   ELEMENT 00

[7] ANALOG DATA   ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	6655	6655	9	5442	5445	17	4228	4233	25	3017	3021
2	6504	6507	10	5289	5293	18	4078	4081	26	2864	2869
3	6351	6355	11	5139	5142	19	3926	3929	27	2712	2716
4	6200	6204	12	4986	4990	20	3775	3779	28	2560	2563
5	6051	6052	13	4836	4839	21	3622	3627	29	2410	2413
6	5898	5900	14	4686	4688	22	3472	3476	30	2256	2261
7	5746	5749	15	4533	4536	23	3321	3324	CC	665	665
8	5593	5597	16	4382	4385	24	3168	3172	WC	12650	12650

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TDS 19

AMSU A2-18 A2.EXE FULL SCAN MODE 2-MAR-99 17:12:10 SCAN NUMBER 93

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 2

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16464	9	16463	17	16460	25	16454
2	16459	10	16465	18	16464	26	16461
3	16462	11	16466	19	16464	27	16460
4	16459	12	16467	20	16468	28	16467
5	16455	13	16458	21	16457	29	16464
6	16463	14	16474	22	16459	30	16452
7	16464	15	16476	23	16462	CC	16456
8	16464	16	16472	24	16460	WC	16454

[21] UP [22] DOWN

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT TOUCHSCREEN BUTTON 2

AMSU A2-18 A2.EXE FULL_SCAN_MODE 2-MAR-99 17:12:30 SCAN NUMBER 95

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES

NO		DATA	TEMP C	NO		DATA	TEMP C
1	SCAN MOTOR	16825	21.03	11	RF SHELF	17160	21.68
2	FEED HORN	17406	21.94	12	DET/PREAMP	17536	22.44
3	RF MUX	17594	22.36	13	WARM LOAD CNTR	22104	20.96
4	MIXER IF CH 1	17655	22.66	14	WARM LOAD 1	22212	21.08
5	MIXER IF CH 2	17740	22.93	15	WARM LOAD 2	22089	20.89
6	LO CHANNEL 1	17439	22.05	16	WARM LOAD 3	22000	21.18
7	LO CHANNEL 2	17986	23.14	17	WARM LOAD 4	22080	20.75
8	COMP MOTOR	16918	20.81	18	WARM LOAD 5	22152	20.91
9	SUBREFLECTOR	17438	22.26	19	WARM LOAD 6	22502	20.92
10	DC/DC CONVERTER	18038	23.30		THERMAL REFERENCE	25000	

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TDS 21

```
AMSU  A2-1  A2.EXE     WARM CAL MODE        2-MAR-99     18:12  SCAN NUMBER    137
[ 5 ] DIGITAL A DATA   ELEMENT 0000
[ 6 ] DIGITAL B DATA   ELEMENT   00
[ 7 ] ANALOG DATA      ELEMENT   00

                                  COMMANDS
[ 9 ]  MODULE POWER =           CONNECT   ANTENNA IN COLD CAL POSIT = NO  [ 15 ]
[ 10 ] SURVIVAL HEATER POWER =      OFF   ANTENNA IN NADIR POSITION = NO  [ 16 ]
[ 11 ] MODULE TOTALLY OFF =         ON    ANTENNA IN FULL SCAN MODE = NO  [ 17 ]
[ 12 ] SCANNER A2 POWER =           ON    COLD CAL POSITION MSB =   ZERO  [ 18 ]
[ 13 ] COMPENSATOR MOTOR POWER =    ON    COLD CAL POSITION LSB =   ZERO  [ 19 ]
[ 14 ] ANTENNA IN WARM CAL POSIT = YES
         POWER [ 4 ]  ON
                      SCREEN ONLY [ 2 ]  PRINT  [ 3 ] FULL      [ 1 ] RETURN
 SELECT TOUCHSCREEN BUTTON 3
```

TDS 22

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	138	REFLECTOR POSITION 17	12651
2	SYNC SEQUENCE BYTE 2	11111111	140	REFL POS 17 2ND LOOK	12651
3	SYNC SEQUENCE BYTE 3	11111111	142	SCENE DATA BP 17 CH 1	16534
4	UNIT ID AND SERIAL NO	00010010	144	CH 2	16443
5	DIGITAL B DATA BYTE 1	00000100	146	REFLECTOR POSITION 18	12651
6	DIGITAL B DATA BYTE 2	00000110	148	REFL POS 18 2ND LOOK	12651
7	DIGITAL B DATA BYTE 3	00000000	150	SCENE DATA BP 18 CH 1	16528
8	DIGITAL B DATA BYTE 4	00000000	152	CH 2	16445
10	REFLECTOR POSITION 1	12651	154	REFLECTOR POSITION 19	12651
12	REFL POS 1 2ND LOOK	12651	156	REFL POS 19 2ND LOOK	12651
14	SCENE DATA BP 1 CH 1	16532	158	SCENE DATA BP 19 CH 1	16534
16	CH 2	16445	160	CH 2	16440
18	REFLECTOR POSITION 2	12651	162	REFLECTOR POSITION 20	12651
20	REFL POS 2 2ND LOOK	12651	164	REFL POS 20 2ND LOOK	12651
22	SCENE DATA BP 2 CH 1	16528	166	SCENE DATA BP 20 CH 1	16535
24	CH 2	16437	168	CH 2	16442
26	REFLECTOR POSITION 3	12651	170	REFLECTOR POSITION 21	12651
28	REFL POS 3 2ND LOOK	12651	172	REFL POS 21 2ND LOOK	12651
30	SCENE DATA BP 3 CH 1	16531	174	SCENE DATA BP 21 CH 1	16533
32	CH 2	16444	176	CH 2	16447
34	REFLECTOR POSITION 4	12651	178	REFLECTOR POSITION 22	12651
36	REFL POS 4 2ND LOOK	12651	180	REFL POS 22 2ND LOOK	12651
38	SCENE DATA BP 4 CH 1	16534	182	SCENE DATA BP 22 CH 1	16529
40	CH 2	16441	184	CH 2	16443
42	REFLECTOR POSITION 5	12651	186	REFLECTOR POSITION 23	12651
44	REFL POS 5 2ND LOOK	12651	188	REFL POS 23 2ND LOOK	12651
46	SCENE DATA BP 5 CH 1	16532	190	SCENE DATA BP 23 CH 1	16531
48	CH 2	16441	192	CH 2	16438
50	REFLECTOR POSITION 6	12651	194	REFLECTOR POSITION 24	12651
52	REFL POS 6 2ND LOOK	12651	196	REFL POS 24 2ND LOOK	12651
54	SCENE DATA BP 6 CH 1	16532	198	SCENE DATA BP 24 CH 1	16531
56	CH 2	16441	200	CH 2	16444
58	REFLECTOR POSITION 7	12651	202	REFLECTOR POSITION 25	12651
60	REFL POS 7 2ND LOOK	12651	204	REFL POS 25 2ND LOOK	12651
62	SCENE DATA BP 7 CH 1	16534	206	SCENE DATA BP 25 CH 1	16530
64	CH 2	16438	208	CH 2	16447
66	REFLECTOR POSITION 8	12651	210	REFLECTOR POSITION 26	12651
68	REFL POS 8 2ND LOOK	12651	212	REFL POS 26 2ND LOOK	12651
70	SCENE DATA BP 8 CH 1	16528	214	SCENE DATA BP 26 CH 1	16531
72	CH 2	16442	216	CH 2	16443
74	REFLECTOR POSITION 9	12651	218	REFLECTOR POSITION 27	12651
76	REFL POS 9 2ND LOOK	12651	220	REFL POS 27 2ND LOOK	12651
78	SCENE DATA BP 9 CH 1	16535	222	SCENE DATA BP 27 CH 1	16531
80	CH 2	16441	224	CH 2	16444
82	REFLECTOR POSITION 10	12651	226	REFLECTOR POSITION 28	12651
84	REFL POS 10 2ND LOOK	12651	228	REFL POS 28 2ND LOOK	12651
86	SCENE DATA BP 10 CH 1	16537	230	SCENE DATA BP 28 CH 1	16536
88	CH 2	16441	232	CH 2	16441
90	REFLECTOR POSITION 11	12651	234	REFLECTOR POSITION 29	12651
92	REFL POS 11 2ND LOOK	12651	236	REFL POS 29 2ND LOOK	12651

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94	SCENE DATA BP 11 CH 1	16530	238	SCENE DATA BP 29 CH 1	16529
96	CH 2	16441	240	CH 2	16442
98	REFLECTOR POSITION 12	12651	242	REFLECTOR POSITION 30	12651
100	REFL POS 12 2ND LOOK	12651	244	REFL POS 30 2ND LOOK	12651
102	SCENE DATA BP 12 CH 1	16528	246	SCENE DATA BP 30 CH 1	16533
104	CH 2	16440	248	CH 2	16442
106	REFLECTOR POSITION 13	12651	250	REFLECTOR COLD CAL POS	0E
108	REFL POS 13 2ND LOOK	12651	252	REFL COLD CAL 2ND LOOK	0E
110	SCENE DATA BP 13 CH 1	16528	254	COLD CAL DATA 1 CH 1	0
112	CH 2	16441	256	CH 2	0
114	REFLECTOR POSITION 14	12651	258	COLD CAL DATA 2 CH 1	0
116	REFL POS 14 2ND LOOK	12651	260	CH 2	0
118	SCENE DATA BP 14 CH 1	16531	302	REFLECTOR WARM CAL POS	0E
120	CH 2	16441	304	REFL WARM CAL 2ND LOOK	0E
122	REFLECTOR POSITION 15	12651	306	WARM CAL DATA 1 CH 1	0
124	REFL POS 15 2ND LOOK	12651	308	CH 2	0
126	SCENE DATA BP 15 CH 1	16533	310	WARM CAL DATA 2 CH 1	0
128	CH 2	16443	312	CH 2	0
130	REFLECTOR POSITION 16	12651			
132	REFL POS 16 2ND LOOK	12651			
134	SCENE DATA BP 16 CH 1	16532			
136	CH 2	16441			

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE DEG C
262	SCAN MOTOR	16865	21.11
264	FEED HORN	17489	22.10
266	RF MUX	17725	22.61
268	MIXER/IF AMPLIFIER CHANNEL 1	17799	22.93
270	MIXER/IF AMPLIFIER CHANNEL 2	17893	23.22
272	LOCAL OSCILLATOR CHANNEL 1	17576	22.32
274	LOCAL OSCILLATOR CHANNEL 2	18151	23.46
276	COMPENSATION MOTOR	16998	20.97
278	SUB REFLECTOR	17461	22.31
280	DC/DC CONVERTER	18361	23.93
282	RF SHELF	17278	21.91
284	DETECTOR/PREAMP ASSEMBLY	17673	22.71
286	WARM LOAD CENTER	22121	20.99
288	WARM LOAD 1	22211	21.08
290	WARM LOAD 2	22121	20.96
292	WARM LOAD 3	22015	21.21
294	WARM LOAD 4	22084	20.76
296	WARM LOAD 5	22175	20.96
298	WARM LOAD 6	22503	20.92
300	TEMP SENSOR REFERENCE VOLTAGE	25000	

DESCRIPTION	STATUS	STATUS	STATUS
SCANNER POWER	ON	ON	ON
COMPENSATOR MOTOR POWER	ON	ON	ON
ANTENNA IN WARM CAL POSITION MODE	YES	YES	YES
ANTENNA IN COLD CAL POSITION MODE	NO	NO	NO
ANTENNA IN NADIR POSITION MODE	NO	NO	NO
ANTENNA IN FULL SCAN MODE	NO	NO	NO
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	ON	ON	ON
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
RF SHELF TEMPERATURE	217	22.1	217	22.1	217	22.1
COMPENSATOR MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
SCANNER MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
WARM LOAD TEMPERATURE	216	20.7	216	20.7	216	20.7

DESCRIPTION	VALUE	MA / VOLTS	VALUE	MA / VOLTS	VALUE	MA / VOLTS
ANTENNA DRIVE MOTOR CURRENT (AVERAGE)	5	2.73	5	2.73	5	2.73
COMPENSATOR MOTOR CURRENT (AVERAGE)	5	2.73	5	2.73	5	2.73
SIGNAL PROCESSING +15 VDC	172	15.00	172	15.00	172	15.00
ANTENNA DRIVE +15 VDC	172	14.57	172	14.57	172	14.57
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	150	-14.64	150	-14.64	150	-14.64
RECEIVER +10 VDC	173	10.00	173	10.00	173	10.00
RADIOMETER, RECEIVER, PROCESSOR +5 VDC	148	5.00	148	5.00	148	5.00
ANTENNA DRIVE +5 VDC	148	5.01	148	5.01	148	5.01
GUNN DIODE OSC #1 (CHANNEL 1) VDC	175	10.06	175	10.06	175	10.06
GUNN DIODE OSC #2 (CHANNEL 2) VDC	175	10.00	175	10.00	175	10.00

PRT TEMPERATURES

	NO.	DEG K	NO.	DEG K
VARIABLE TARGET	601	14.00	607	20.00
	602	15.00	608	21.00
	603	16.00	609	22.00
	604	17.00	610	23.00
	605	18.00	611	24.00
	606	19.00		
FIXED TARGET	612	39.00	618	45.00
	613	40.00	619	46.00
	614	41.00	620	47.00
	615	42.00	621	48.00
	616	43.00	622	49.00
	617	44.00		
BASEPLATE	623	25.00	625	50.00
	624	26.00	626	27.00

THERMOCOUPLE TEMPERATURES

	NO.	DEG K	NO.	DEG K
FIXED TARGET SHROUD	532	32.00	533	33.00
VARIABLE TARGET SHROUD	515	7.00	516	8.00
FIXED TARGET N2	502	30.00	503	31.00
VARIABLE TARGET N2	507	5.00	508	6.00
HEATER N2	505	1.00	506	2.00
FIXED TARGET FLOW METER	504	34.00		
VARIABLE TARGET FLOW METER	509	9.00		
BASEPLATE HEATER N2	510	3.00	511	4.00
BASEPLATE N2	512	36.00	513	37.00
BASEPLATE FLOW METER	514	35.00		
ADJUNCT RADIATORS	549	38.00	554	55.00
	542	10.00	556	57.00

SHEET 120 OF ___
ECP NO. 1980

TEST DATA SHEET 23

Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, 3.2.4.3.4.4)

1/23/99

AMSU 2 SEIT

QC 223

BP	Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC ~~WL~~	3.2.4.3.4.2, Step 5			
~~CL~~ CC	3.2.4.3.4.3, Step 5			
	a.			
	b.			
	c.			
	d.			
15	3.2.4.3.4.4, Step 5			

WC ~~WL~~ = Warm Load
CC ~~CL~~ = Cold Load
15 = Nadir Position

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required position data from TDS 6 of AE-26002/2 ±5 counts.

3.2.4.3.4.3, Step 5 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

3-3-99 AMSU 8 SEIT QC 16

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT (Final CPT) Sub CPT ________

Shop Order: 584763 ~~335166~~ S/N: 105

Test Systems Engineer 3-2-99 Date

Customer Representative 3-4-99 Date
(Flight Hardware Only)

Quality Control 7A 262 3-5-99 Date

SHEET 121 OF ___
ECP NO. 1980

TEST DATA SHEET 24
Digital-A Data Output Warm Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.2)

BP	Channel-1 (23.8 GHz)				Channel-2 (31.4 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0014			P	0016			P
02	0022				0024			
03	0030				0032			
04	0038				0040			
05	0046				0048			
06	0054				0056			
07	0062				0064			
08	0070				0072			
09	0078				0080			
10	0086				0088			
11	0094				0096			
12	0102				0104			
13	0110				0112			
14	0118				0120			
15	0126				0128			
16	0134				0136			
17	0142				0144			
18	0150				0152			
19	0158				0160			
20	0166				0168			
21	0174				0176			
22	0182				0184			
23	0190				0192			
24	0198				0200			
25	0206				0208			
26	0214				0216			
27	0222				0224			
28	0230				0232			
29	0238				0240			
30	0246				0248			
CC	0258		0		0260		0	
~~WL~~ WC	0310		0		0312		0	

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required = 16,500 ± 4000 counts.

AMSU 2 SEIT

QC 16

QC 223
1/23/98

AMSU 8 SEIT 3-3-99

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT (Final CPT) Sub CPT ______

Shop Order: 584763 ~~333161~~
S/N: 105

R. Haid 3-2-99
Test Systems Engineer Date

F. Falaegas 3-4-99
Customer Representative Date
(Flight Hardware Only)

QC 7A 252 3-4-99
Quality Control Date

AMSU A2-18 A2.EXE WARM_CAL_MODE 2-MAR-99 17:19:54 SCAN NUMBER 150
[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	12651	12651	9	12651	12651	17	12651	12651	25	12651	12651
2	12651	12651	10	12651	12651	18	12651	12651	26	12651	12651
3	12651	12651	11	12651	12651	19	12651	12651	27	12651	12651
4	12651	12651	12	12651	12651	20	12651	12651	28	12651	12651
5	12651	12651	13	12651	12651	21	12651	12651	29	12651	12651
6	12651	12651	14	12651	12651	22	12651	12651	30	12651	12651
7	12651	12651	15	12651	12651	23	12651	12651	CC	0	0
8	12651	12651	16	12651	12651	24	12651	12651	WC	0	0

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT_TOUCHSCREEN_BUTTON 2

TDS 23
W.C.

AMSU A2-18 A2.EXE COLD CAL MODE 2-MAR-99 17:24:10 SCAN NUMBER 182

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	667	667	9	667	667	17	667	667	25	667	667
2	667	667	10	667	667	18	667	667	26	667	667
3	667	667	11	667	667	19	667	667	27	667	667
4	667	667	12	667	667	20	667	667	28	667	667
5	667	667	13	667	667	21	667	667	29	667	667
6	667	667	14	667	667	22	667	667	30	667	667
7	667	667	15	667	667	23	667	667	CC	0	0
8	667	667	16	667	667	24	667	667	WC	0	0

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

AMSU A2-18 A2.EXE COLD CAL MODE 2-MAR-99 17:24:50 SCAN NUMBER 187

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	739	739	9	739	739	17	739	739	25	739	739
2	739	739	10	739	739	18	739	739	26	739	739
3	739	739	11	739	739	19	739	739	27	739	739
4	739	739	12	739	739	20	739	739	28	739	739
5	739	739	13	739	739	21	739	739	29	739	739
6	739	739	14	739	739	22	739	739	30	739	739
7	739	739	15	739	739	23	739	739	CC	0	0
8	739	739	16	739	739	24	739	739	WC	0	0

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

AMSU A2-18 A2.EXE COLD CAL MODE 2-MAR-99 17:25:46 SCAN NUMBER 194

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	819	819	9	819	819	17	819	819	25	819	819
2	819	819	10	819	819	18	819	819	26	819	819
3	819	819	11	819	819	19	819	819	27	819	819
4	819	819	12	819	819	20	819	819	28	819	819
5	819	819	13	819	819	21	819	819	29	819	819
6	819	819	14	819	819	22	819	819	30	819	819
7	819	819	15	819	819	23	819	819	CC	0	0
8	819	819	16	819	819	24	819	819	WC	0	0

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

AMSU A2-18 A2.EXE COLD CAL MODE 2-MAR-99 17:26:50 SCAN NUMBER 202

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	967	967	9	967	967	17	967	967	25	967	967
2	967	967	10	967	967	18	967	967	26	967	967
3	967	967	11	967	967	19	967	967	27	967	967
4	967	967	12	967	967	20	967	967	28	967	967
5	967	967	13	967	967	21	967	967	29	967	967
6	967	967	14	967	967	22	967	967	30	967	967
7	967	967	15	967	967	23	967	967	CC	0	0
8	967	967	16	967	967	24	967	967	WC	0	0

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT TOUCHSCREEN BUTTON 2

AMSU A2-18 A2.EXE NADIR MODE 2-MAR-99 17:30:34 SCAN NUMBER 230

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	4534	4534	9	4534	4534	17	4534	4534	25	4534	4534
2	4534	4534	10	4534	4534	18	4534	4534	26	4534	4534
3	4534	4534	11	4534	4534	19	4534	4534	27	4534	4534
4	4534	4534	12	4534	4534	20	4534	4534	28	4534	4534
5	4534	4534	13	4534	4534	21	4534	4534	29	4534	4534
6	4534	4534	14	4534	4534	22	4534	4534	30	4534	4534
7	4534	4534	15	4534	4534	23	4534	4534	CC	0	0
8	4534	4534	16	4534	4534	24	4534	4534	WC	0	0

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

AMSU A2-18 A2.EXE WARM_CAL_MODE 2-MAR-99 17:19:00 SCAN NUMBER 143

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 1

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16534	9	16528	17	16522	25	16530
2	16534	10	16529	18	16529	26	16529
3	16532	11	16527	19	16530	27	16524
4	16530	12	16530	20	16530	28	16530
5	16530	13	16526	21	16528	29	16530
6	16531	14	16528	22	16531	30	16530
7	16531	15	16529	23	16526	CC	0
8	16527	16	16529	24	16530	WC	0

[21] UP [22] DOWN

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TDS 24

AMSU A2-18 A2.EXE WARM CAL MODE 2-MAR-99 17:19:10 SCAN NUMBER 145

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 2

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16443	9	16439	17	16441	25	16441
2	16439	10	16441	18	16445	26	16437
3	16442	11	16450	19	16447	27	16438
4	16443	12	16445	20	16444	28	16445
5	16448	13	16437	21	16442	29	16444
6	16443	14	16437	22	16445	30	16444
7	16442	15	16442	23	16439	CC	0
8	16444	16	16445	24	16444	WC	0

[21] UP [22] DOWN

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 25
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
0262	Scan Motor		25 ± 15	P
0264	Feedhorn		25 ± 15	
0266	RF Mux		25 ± 15	
0268	Mixer I.F. Amp. Channel 1		25 ± 15	
0270	Mixer I.F. Amp. Channel 2		25 ± 15	
0272	Local Oscillator Channel 1		25 ± 15	
0274	Local Oscillator Channel 2		25 ± 15	
0276	Compensation Motor		25 ± 15	
0278	Subreflector		25 ± 15	
0280	DC/DC Converter		25 ± 15	
0282	RF Shelf		25 ± 15	
0284	Detector/Preamp Assembly		25 ± 15	
0286	Warm Load Center		25 ± 15	
0288	Warm Load 1		25 ± 15	
0290	Warm Load 2		25 ± 15	
0292	Warm Load 3		25 ± 15	
0294	Warm Load 4		25 ± 15	
0296	Warm Load 5		25 ± 15	
0298	Warm Load 6		25 ± 15	
0300	Temp Sensor V. Reference		**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** Count of 24,552 +1765, -1308.

METSAT/AMSU A2 System ~~CPT PA~~ IS-1331200 Shop Order: 584765 ~~333166~~ 3-3-99 QC 16 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

R. Hais 3-2-99
Test Systems Engineer Date

J. Zaluaga 3-4-99 7A 262 3-4-99
Customer Representative Date Quality Control Date
(Flight Hardware Only)

SHEET 123 OF ___
ECR NO. 1980

TEST DATA SHEET 26
Digital-A Data Output Cold Cal Mode Synch Sequence, Unit I.D./Serial Number and Digital-B Serial Data Verification Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.3)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	18	*	
[III]	0005	Digital B Data Byte 1	8	8	
	0006	Digital B Data Byte 2	6	6	
	0007	Digital B Data Byte 3	0	0	
	0008	Digital B Data Byte 4	0	0	

* AMSU A2 Identification Words (data entered in decimal system)

	Binary	Decimal
AMSU-A2 S/N 101	00000010	2
AMSU-A2 S/N 102	00000110	6
AMSU-A2 S/N 103	00001010	10
AMSU-A2 S/N 104	00001110	14
AMSU-A2 S/N 105	00010010	18
AMSU-A2 S/N 106	00010110	22
AMSU-A2 S/N 107	00011010	26
AMSU-A2 S/N 108	00011110	30
AMSU-A2 S/N 109	00100010	34

QC 16

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: ~~331166~~ 584763 AMSU 8 SEIT 3-3-99
S/N: 105

R. Hai 3-2-99
Test Systems Engineer Date

F. Galaegac 3-4-99
Customer Representative Date
(Flight Hardware Only)

TA 262 3-4-99
Quality Control Date

AMSU A2-18 A2.EXE WARM CAL MODE 2-MAR-99 17:19:29 SCAN NUMBER 147

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES

NO		DATA	TEMP C	NO		DATA	TEMP C
1	SCAN MOTOR	16874	21.12	11	RF SHELF	17306	21.96
2	FEED HORN	17503	22.12	12	DET/PREAMP	17702	22.76
3	RF MUX	17752	22.66	13	WARM LOAD CNTR	22121	20.99
4	MIXER IF CH 1	17829	22.99	14	WARM LOAD 1	22211	21.08
5	MIXER IF CH 2	17923	23.28	15	WARM LOAD 2	22129	20.97
6	LO CHANNEL 1	17606	22.37	16	WARM LOAD 3	22020	21.22
7	LO CHANNEL 2	18182	23.52	17	WARM LOAD 4	22096	20.79
8	COMP MOTOR	17001	20.97	18	WARM LOAD 5	22187	20.98
9	SUBREFLECTOR	17471	22.33	19	WARM LOAD 6	22521	20.96
10	DC/DC CONVERTER	18424	24.05		THERMAL REFERENCE	25000	

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT_TOUCHSCREEN_BUTTON 2

TDS 25

```
AMSU  A2-18 A2.EXE    COLD CAL MODE        2-MAR-99  17:27:29  SCAN NUMBER   207
[ 5 ] DIGITAL A DATA  ELEMENT 0000
[ 6 ] DIGITAL B DATA  ELEMENT   00
[ 7 ] ANALOG DATA     ELEMENT   00

                                        COMMANDS
[ 9 ]  MODULE POWER =            CONNECT    ANTENNA IN COLD CAL POSIT = YES [ 15 ]
[ 10 ] SURVIVAL HEATER POWER =       OFF    ANTENNA IN NADIR POSITION = NO  [ 16 ]
[ 11 ] MODULE TOTALLY OFF =          ON     ANTENNA IN FULL SCAN MODE = NO  [ 17 ]
[ 12 ] SCANNER A2 POWER =            ON     COLD CAL POSITION MSB =    ZERO [ 18 ]
[ 13 ] COMPENSATOR MOTOR POWER =     ON     COLD CAL POSITION LSB =    ZERO [ 19 ]
[ 14 ] ANTENNA IN WARM CAL POSIT = NO
          POWER [ 4 ]  ON
                       SCREEN ONLY [ 2 ]  PRINT  [ 3 ] FULL       [ 1 ] RETURN
 SELECT TOUCHSCREEN BUTTON 3
```

TDS 26

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	138	REFLECTOR POSITION 17	667
2	SYNC SEQUENCE BYTE 2	11111111	140	REFL POS 17 2ND LOOK	667
3	SYNC SEQUENCE BYTE 3	11111111	142	SCENE DATA BP 17 CH 1	16520
4	UNIT ID AND SERIAL NO	00010010	144	CH 2	16444
5	DIGITAL B DATA BYTE 1	00001000	146	REFLECTOR POSITION 18	667
6	DIGITAL B DATA BYTE 2	00000110	148	REFL POS 18 2ND LOOK	667
7	DIGITAL B DATA BYTE 3	00000000	150	SCENE DATA BP 18 CH 1	16520
8	DIGITAL B DATA BYTE 4	00000000	152	CH 2	16444
10	REFLECTOR POSITION 1	667	154	REFLECTOR POSITION 19	667
12	REFL POS 1 2ND LOOK	667	156	REFL POS 19 2ND LOOK	667
14	SCENE DATA BP 1 CH 1	16524	158	SCENE DATA BP 19 CH 1	16527
16	CH 2	16444	160	CH 2	16443
18	REFLECTOR POSITION 2	667	162	REFLECTOR POSITION 20	667
20	REFL POS 2 2ND LOOK	667	164	REFL POS 20 2ND LOOK	667
22	SCENE DATA BP 2 CH 1	16522	166	SCENE DATA BP 20 CH 1	16519
24	CH 2	16441	168	CH 2	16448
26	REFLECTOR POSITION 3	667	170	REFLECTOR POSITION 21	667
28	REFL POS 3 2ND LOOK	667	172	REFL POS 21 2ND LOOK	667
30	SCENE DATA BP 3 CH 1	16517	174	SCENE DATA BP 21 CH 1	16521
32	CH 2	16446	176	CH 2	16445
34	REFLECTOR POSITION 4	667	178	REFLECTOR POSITION 22	667
36	REFL POS 4 2ND LOOK	667	180	REFL POS 22 2ND LOOK	667
38	SCENE DATA BP 4 CH 1	16519	182	SCENE DATA BP 22 CH 1	16523
40	CH 2	16448	184	CH 2	16444
42	REFLECTOR POSITION 5	667	186	REFLECTOR POSITION 23	667
44	REFL POS 5 2ND LOOK	667	188	REFL POS 23 2ND LOOK	667
46	SCENE DATA BP 5 CH 1	16520	190	SCENE DATA BP 23 CH 1	16522
48	CH 2	16446	192	CH 2	16443
50	REFLECTOR POSITION 6	667	194	REFLECTOR POSITION 24	667
52	REFL POS 6 2ND LOOK	667	196	REFL POS 24 2ND LOOK	667
54	SCENE DATA BP 6 CH 1	16519	198	SCENE DATA BP 24 CH 1	16524
56	CH 2	16445	200	CH 2	16443
58	REFLECTOR POSITION 7	667	202	REFLECTOR POSITION 25	667
60	REFL POS 7 2ND LOOK	667	204	REFL POS 25 2ND LOOK	667
62	SCENE DATA BP 7 CH 1	16518	206	SCENE DATA BP 25 CH 1	16519
64	CH 2	16443	208	CH 2	16445
66	REFLECTOR POSITION 8	667	210	REFLECTOR POSITION 26	667
68	REFL POS 8 2ND LOOK	667	212	REFL POS 26 2ND LOOK	667
70	SCENE DATA BP 8 CH 1	16519	214	SCENE DATA BP 26 CH 1	16525
72	CH 2	16441	216	CH 2	16445
74	REFLECTOR POSITION 9	667	218	REFLECTOR POSITION 27	667
76	REFL POS 9 2ND LOOK	667	220	REFL POS 27 2ND LOOK	667
78	SCENE DATA BP 9 CH 1	16525	222	SCENE DATA BP 27 CH 1	16519
80	CH 2	16441	224	CH 2	16447
82	REFLECTOR POSITION 10	667	226	REFLECTOR POSITION 28	667
84	REFL POS 10 2ND LOOK	667	228	REFL POS 28 2ND LOOK	667
86	SCENE DATA BP 10 CH 1	16522	230	SCENE DATA BP 28 CH 1	16520
88	CH 2	16440	232	CH 2	16447
90	REFLECTOR POSITION 11	667	234	REFLECTOR POSITION 29	667
92	REFL POS 11 2ND LOOK	667	236	REFL POS 29 2ND LOOK	667

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94	SCENE DATA BP 11 CH 1	16521	238	SCENE DATA BP 29 CH 1	16522
96	CH 2	16444	240	CH 2	16444
98	REFLECTOR POSITION 12	667	242	REFLECTOR POSITION 30	667
100	REFL POS 12 2ND LOOK	667	244	REFL POS 30 2ND LOOK	667
102	SCENE DATA BP 12 CH 1	16523	246	SCENE DATA BP 30 CH 1	16524
104	CH 2	16446	248	CH 2	16444
106	REFLECTOR POSITION 13	667	250	REFLECTOR COLD CAL POS	0E
108	REFL POS 13 2ND LOOK	667	252	REFL COLD CAL 2ND LOOK	0E
110	SCENE DATA BP 13 CH 1	16521	254	COLD CAL DATA 1 CH 1	0
112	CH 2	16444	256	CH 2	0
114	REFLECTOR POSITION 14	667	258	COLD CAL DATA 2 CH 1	0
116	REFL POS 14 2ND LOOK	667	260	CH 2	0
118	SCENE DATA BP 14 CH 1	16522	302	REFLECTOR WARM CAL POS	0E
120	CH 2	16446	304	REFL WARM CAL 2ND LOOK	0E
122	REFLECTOR POSITION 15	667	306	WARM CAL DATA 1 CH 1	0
124	REFL POS 15 2ND LOOK	667	308	CH 2	0
126	SCENE DATA BP 15 CH 1	16523	310	WARM CAL DATA 2 CH 1	0
128	CH 2	16442	312	CH 2	0
130	REFLECTOR POSITION 16	667			
132	REFL POS 16 2ND LOOK	667			
134	SCENE DATA BP 16 CH 1	16520			
136	CH 2	16445			

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE DEG C
262	SCAN MOTOR	16881	21.14
264	FEED HORN	17563	22.24
266	RF MUX	17888	22.92
268	MIXER/IF AMPLIFIER CHANNEL 1	17991	23.31
270	MIXER/IF AMPLIFIER CHANNEL 2	18071	23.57
272	LOCAL OSCILLATOR CHANNEL 1	17764	22.68
274	LOCAL OSCILLATOR CHANNEL 2	18356	23.86
276	COMPENSATION MOTOR	17012	20.99
278	SUB REFLECTOR	17493	22.37
280	DC/DC CONVERTER	18728	24.64
282	RF SHELF	17444	22.23
284	DETECTOR/PREAMP ASSEMBLY	17863	23.07
286	WARM LOAD CENTER	22152	21.05
288	WARM LOAD 1	22229	21.11
290	WARM LOAD 2	22159	21.03
292	WARM LOAD 3	22053	21.28
294	WARM LOAD 4	22110	20.81
296	WARM LOAD 5	22210	21.03
298	WARM LOAD 6	22544	21.00
300	TEMP SENSOR REFERENCE VOLTAGE	25001	

DESCRIPTION	STATUS	STATUS	STATUS
SCANNER POWER	ON	ON	ON
COMPENSATOR MOTOR POWER	ON	ON	ON
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	YES	YES	YES
ANTENNA IN NADIR POSITION MODE	NO	NO	NO
ANTENNA IN FULL SCAN MODE	NO	NO	NO
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	ON	ON	ON
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
RF SHELF TEMPERATURE	217	22.1	217	22.1	217	22.1
COMPENSATOR MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
SCANNER MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
WARM LOAD TEMPERATURE	216	20.7	216	20.7	216	20.7

DESCRIPTION	VALUE	MA / VOLTS	VALUE	MA / VOLTS	VALUE	MA / VOLTS
ANTENNA DRIVE MOTOR CURRENT (AVERAGE)	5	2.73	5	2.73	5	2.73
COMPENSATOR MOTOR CURRENT (AVERAGE)	5	2.73	5	2.73	5	2.73
SIGNAL PROCESSING +15 VDC	172	15.00	172	15.00	172	15.00
ANTENNA DRIVE +15 VDC	172	14.57	172	14.57	172	14.57
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	150	-14.64	150	-14.64	150	-14.64
RECEIVER +10 VDC	173	10.00	174	10.06	174	10.06
RADIOMETER, RECEIVER, PROCESSOR +5 VDC	148	5.00	148	5.00	148	5.00
ANTENNA DRIVE +5 VDC	149	5.04	149	5.04	149	5.04
GUNN DIODE OSC #1 (CHANNEL 1) VDC	174	10.00	174	10.00	174	10.00
GUNN DIODE OSC #2 (CHANNEL 2) VDC	174	9.94	174	9.94	174	9.94

PRT TEMPERATURES

	NO.	DEG K	NO.	DEG K
VARIABLE TARGET	601	14.00	607	20.00
	602	15.00	608	21.00
	603	16.00	609	22.00
	604	17.00	610	23.00
	605	18.00	611	24.00
	606	19.00		
FIXED TARGET	612	39.00	618	45.00
	613	40.00	619	46.00
	614	41.00	620	47.00
	615	42.00	621	48.00
	616	43.00	622	49.00
	617	44.00		
BASEPLATE	623	25.00	625	50.00
	624	26.00	626	27.00

THERMOCOUPLE TEMPERATURES

	NO.	DEG K	NO.	DEG K
FIXED TARGET SHROUD	532	32.00	533	33.00
VARIABLE TARGET SHROUD	515	7.00	516	8.00
FIXED TARGET N2	502	30.00	503	31.00
VARIABLE TARGET N2	507	5.00	508	6.00
HEATER N2	505	1.00	506	2.00
FIXED TARGET FLOW METER	504	34.00		
VARIABLE TARGET FLOW METER	509	9.00		
BASEPLATE HEATER N2	510	3.00	511	4.00
BASEPLATE N2	512	36.00	513	37.00
BASEPLATE FLOW METER	514	35.00		
ADJUNCT RADIATORS	549	38.00	554	55.00
	542	10.00	556	57.00

TEST DATA SHEET 27
Digital-A Data Output Cold Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.3)
Condition: Cold Cal Position MSB=0 and Cold Cal Position LSB=0

BP	Channel-1 (23.8 GHz)				Channel-2 (31.4 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0014			P	0016			P
02	0022				0024			
03	0030				0032			
04	0038				0040			
05	0046				0048			
06	0054				0056			
07	0062				0064			
08	0070				0072			
09	0078				0080			
10	0086				0088			
11	0094				0096			
12	0102				0104			
13	0110				0112			
14	0118				0120			
15	0126				0128			
16	0134				0136			
17	0142				0144			
18	0150				0152			
19	0158				0160			
20	0166				0168			
21	0174				0176			
22	0182				0184			
23	0190				0192			
24	0198				0200			
25	0206				0208			
26	0214				0216			
27	0222				0224			
28	0230				0232			
29	0238				0240			
30	0246				0248			
CC	0258		0		0260		0	
~~WL~~ WC	0310		0	P	0312		0	P

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required = 16,500 ± 4000 counts.

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT **Final CPT** Sub CPT ________

Shop Order: 581763 ~~333166~~ 3-3-99
S/N: 105

R. Hai 3-2-99
Test Systems Engineer Date

Quality Control 3-4-99 Date

J. Galaczac 3-4-99
Customer Representative Date
(Flight Hardware Only)

11/23/98

TEST DATA SHEET 28

Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
0262	Scan Motor		25 ± 15	P
0264	Feedhorn		25 ± 15	
0266	RF Mux		25 ± 15	
0268	Mixer I.F. Amp. Channel 1		25 ± 15	
0270	Mixer I.F. Amp. Channel 2		25 ± 15	
0272	Local Oscillator Channel 1		25 ± 15	
0274	Local Oscillator Channel 2		25 ± 15	
0276	Compensation Motor		25 ± 15	
0278	Subreflector		25 ± 15	
0280	DC/DC Converter		25 ± 15	
0282	RF Shelf		25 ± 15	
0284	Detector/Preamp Assembly		25 ± 15	
0286	Warm Load Center		25 ± 15	
0288	Warm Load 1		25 ± 15	
0290	Warm Load 2		25 ± 15	
0292	Warm Load 3		25 ± 15	
0294	Warm Load 4		25 ± 15	
0296	Warm Load 5		25 ± 15	
0298	Warm Load 6		25 ± 15	
0300	Temp Sensor V. Reference		**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** Count of 24,552 +1765, -1308.

QC 16 3-3-99

584763

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200 Shop Order: ~~[illegible]~~ S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

R. Hail 3-2-99
Test Systems Engineer Date

[signature] 3-4-99
Customer Representative (Flight Hardware Only) Date

TA 262 3-4-99
Quality Control Date

AMSU A2-18 A2.EXE COLD CAL MODE 2-MAR-99 17:32:56 SCAN NUMBER 248

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 1

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16519	9	16513	17	16511	25	16514
2	16516	10	16512	18	16512	26	16512
3	16514	11	16511	19	16511	27	16510
4	16512	12	16511	20	16514	28	16511
5	16513	13	16509	21	16517	29	16516
6	16513	14	16512	22	16511	30	16511
7	16514	15	16511	23	16511	CC	0
8	16512	16	16511	24	16506	WC	0

[21] UP [22] DOWN

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TDS 27

AMSU A2-18 A2.EXE COLD CAL MODE 2-MAR-99 17:33:13 SCAN NUMBER 250

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 2

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16445	9	16445	17	16443	25	16445
2	16448	10	16444	18	16447	26	16440
3	16442	11	16436	19	16444	27	16438
4	16443	12	16437	20	16439	28	16443
5	16450	13	16444	21	16441	29	16443
6	16443	14	16445	22	16444	30	16444
7	16439	15	16442	23	16444	CC	0
8	16439	16	16440	24	16443	WC	0

[21] UP [22] DOWN

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT TOUCHSCREEN BUTTON 2

AMSU A2-18 A2.EXE COLD CAL MODE 2-MAR-99 17:33:28 SCAN NUMBER 252

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES

NO		DATA	TEMP C	NO		DATA	TEMP C
1	SCAN MOTOR	16892	21.16	11	RF SHELF	17528	22.39
2	FEED HORN	17609	22.33	12	DET/PREAMP	17963	23.26
3	RF MUX	17972	23.08	13	WARM LOAD CNTR	22190	21.13
4	MIXER IF CH 1	18090	23.50	14	WARM LOAD 1	22261	21.18
5	MIXER IF CH 2	18160	23.74	15	WARM LOAD 2	22149	21.01
6	LO CHANNEL 1	17862	22.87	16	WARM LOAD 3	22075	21.33
7	LO CHANNEL 2	18459	24.06	17	WARM LOAD 4	22130	20.85
8	COMP MOTOR	17017	21.00	18	WARM LOAD 5	22205	21.02
9	SUBREFLECTOR	17531	22.44	19	WARM LOAD 6	22584	21.08
10	DC/DC CONVERTER	18892	24.96		THERMAL REFERENCE	25001	

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TDS 28

TEST DATA SHEET 29
Digital-A Data Output Nadir Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [III], and [III] (Paragraph 3.2.4.3.4.4)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	P
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital B Data Byte 1		16	
	0006	Digital B Data Byte 2		6	
	0007	Digital B Data Byte 3		0	
	0008	Digital B Data Byte 4		0	

* AMSU A2 Identification Words (data entered in decimal system)	Binary	Decimal
AMSU-A2 S/N 101	00000010	2
AMSU-A2 S/N 102	00000110	6
AMSU-A2 S/N 103	00001010	10
AMSU-A2 S/N 104	00001110	14
AMSU-A2 S/N 105	00010010	18
AMSU-A2 S/N 106	00010110	22
AMSU-A2 S/N 107	00011010	26
AMSU-A2 S/N 108	00011110	30
AMSU-A2 S/N 109	00100010	34

QC 16

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: 584763 ~~335166~~ 3-3-99 S/N: 105

R. Hail 3-2-99
Test Systems Engineer Date

QA 262 3-4-99
Quality Control Date

J. Kalaogzac 3-4-99
Customer Representative Date
(Flight Hardware Only)

SHEET 127 OF ___
ECR NO. 1980

TEST DATA SHEET 30
Digital-A Data Output Nadir Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.4)

BP	Channel-1 (23.8 GHz)				Channel-2 (31.4 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0014			P	0016			P
02	0022				0024			
03	0030				0032			
04	0038				0040			
05	0046				0048			
06	0054				0056			
07	0062				0064			
08	0070				0072			
09	0078				0080			
10	0086				0088			
11	0094				0096			
12	0102				0104			
13	0110				0112			
14	0118				0120			
15	0126				0128			
16	0134				0136			
17	0142				0144			
18	0150				0152			
19	0158				0160			
20	0166				0168			
21	C174				0176			
22	0182				0184			
23	0190				0192			
24	0198				0200			
25	0206				0208			
26	0214				0216			
27	0222				0224			
28	0230				0232			
29	0238				0240			
30	0246				0248			
CC	0258		0		0260		0	
~~WL~~	0310		0		0312	QC 16	0	

QC 223
AMSU 2 TEST
WC 11/23/98

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required = 16,500 ± 4000 counts.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ~~33166~~ 584763 AMSU B SEIT 3-3-99 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

N. Hail 3-2-99
Test Systems Engineer Date

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

QA 262 3-4-99
Quality Control Date

```
AMSU  A2-18 A2.EXE     NADIR MODE          2-MAR-99  17:35:29  SCAN NUMBER   267
[ 5 ] DIGITAL A DATA   ELEMENT 0000
[ 6 ] DIGITAL B DATA   ELEMENT   00
[ 7 ] ANALOG DATA      ELEMENT   00

                                       COMMANDS
[ 9 ]  MODULE POWER =            CONNECT    ANTENNA IN COLD CAL POSIT = NO   [ 15 ]
[ 10 ] SURVIVAL HEATER POWER =       OFF    ANTENNA IN NADIR POSITION = YES  [ 16 ]
[ 11 ] MODULE TOTALLY OFF =          ON     ANTENNA IN FULL SCAN MODE = NO   [ 17 ]
[ 12 ] SCANNER A2 POWER =            ON     COLD CAL POSITION MSB =    ZERO  [ 18 ]
[ 13 ] COMPENSATOR MOTOR POWER =     ON     COLD CAL POSITION LSB =    ZERO  [ 19 ]
[ 14 ] ANTENNA IN WARM CAL POSIT = NO
         POWER [ 4 ]  ON
                      SCREEN ONLY [ 2 ]  PRINT  [ 3 ] FULL       [ 1 ] RETURN
 SELECT TOUCHSCREEN BUTTON 3
```

TDS 29

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	138	REFLECTOR POSITION 17	4534
2	SYNC SEQUENCE BYTE 2	11111111	140	REFL POS 17 2ND LOOK	4534
3	SYNC SEQUENCE BYTE 3	11111111	142	SCENE DATA BP 17 CH 1	16527
4	UNIT ID AND SERIAL NO	00010010	144	CH 2	16470
5	DIGITAL B DATA BYTE 1	00010000	146	REFLECTOR POSITION 18	4534
6	DIGITAL B DATA BYTE 2	00000110	148	REFL POS 18 2ND LOOK	4534
7	DIGITAL B DATA BYTE 3	00000000	150	SCENE DATA BP 18 CH 1	16522
8	DIGITAL B DATA BYTE 4	00000000	152	CH 2	16465
10	REFLECTOR POSITION 1	4534	154	REFLECTOR POSITION 19	4534
12	REFL POS 1 2ND LOOK	4534	156	REFL POS 19 2ND LOOK	4534
14	SCENE DATA BP 1 CH 1	16527	158	SCENE DATA BP 19 CH 1	16528
16	CH 2	16468	160	CH 2	16467
18	REFLECTOR POSITION 2	4534	162	REFLECTOR POSITION 20	4534
20	REFL POS 2 2ND LOOK	4534	164	REFL POS 20 2ND LOOK	4534
22	SCENE DATA BP 2 CH 1	16528	166	SCENE DATA BP 20 CH 1	16524
24	CH 2	16462	168	CH 2	16469
26	REFLECTOR POSITION 3	4534	170	REFLECTOR POSITION 21	4534
28	REFL POS 3 2ND LOOK	4534	172	REFL POS 21 2ND LOOK	4534
30	SCENE DATA BP 3 CH 1	16526	174	SCENE DATA BP 21 CH 1	16523
32	CH 2	16471	176	CH 2	16458
34	REFLECTOR POSITION 4	4534	178	REFLECTOR POSITION 22	4534
36	REFL POS 4 2ND LOOK	4534	180	REFL POS 22 2ND LOOK	4534
38	SCENE DATA BP 4 CH 1	16523	182	SCENE DATA BP 22 CH 1	16523
40	CH 2	16464	184	CH 2	16463
42	REFLECTOR POSITION 5	4534	186	REFLECTOR POSITION 23	4534
44	REFL POS 5 2ND LOOK	4534	188	REFL POS 23 2ND LOOK	4534
46	SCENE DATA BP 5 CH 1	16526	190	SCENE DATA BP 23 CH 1	16524
48	CH 2	16464	192	CH 2	16470
50	REFLECTOR POSITION 6	4534	194	REFLECTOR POSITION 24	4534
52	REFL POS 6 2ND LOOK	4534	196	REFL POS 24 2ND LOOK	4534
54	SCENE DATA BP 6 CH 1	16527	198	SCENE DATA BP 24 CH 1	16525
56	CH 2	16469	200	CH 2	16469
58	REFLECTOR POSITION 7	4534	202	REFLECTOR POSITION 25	4534
60	REFL POS 7 2ND LOOK	4534	204	REFL POS 25 2ND LOOK	4534
62	SCENE DATA BP 7 CH 1	16528	206	SCENE DATA BP 25 CH 1	16529
64	CH 2	16461	208	CH 2	16465
66	REFLECTOR POSITION 8	4534	210	REFLECTOR POSITION 26	4534
68	REFL POS 8 2ND LOOK	4534	212	REFL POS 26 2ND LOOK	4534
70	SCENE DATA BP 8 CH 1	16522	214	SCENE DATA BP 26 CH 1	16525
72	CH 2	16462	216	CH 2	16467
74	REFLECTOR POSITION 9	4534	218	REFLECTOR POSITION 27	4534
76	REFL POS 9 2ND LOOK	4534	220	REFL POS 27 2ND LOOK	4534
78	SCENE DATA BP 9 CH 1	16525	222	SCENE DATA BP 27 CH 1	16526
80	CH 2	16469	224	CH 2	16469
82	REFLECTOR POSITION 10	4534	226	REFLECTOR POSITION 28	4534
84	REFL POS 10 2ND LOOK	4534	228	REFL POS 28 2ND LOOK	4534
86	SCENE DATA BP 10 CH 1	16523	230	SCENE DATA BP 28 CH 1	16524
88	CH 2	16465	232	CH 2	16470
90	REFLECTOR POSITION 11	4534	234	REFLECTOR POSITION 29	4534
92	REFL POS 11 2ND LOOK	4534	236	REFL POS 29 2ND LOOK	4534

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94	SCENE DATA BP 11 CH 1	16528	238	SCENE DATA BP 29 CH 1	16527
96	CH 2	16468	240	CH 2	16464
98	REFLECTOR POSITION 12	4534	242	REFLECTOR POSITION 30	4534
100	REFL POS 12 2ND LOOK	4534	244	REFL POS 30 2ND LOOK	4534
102	SCENE DATA BP 12 CH 1	16522	246	SCENE DATA BP 30 CH 1	16522
104	CH 2	16466	248	CH 2	16465
106	REFLECTOR POSITION 13	4534	250	REFLECTOR COLD CAL POS	0E
108	REFL POS 13 2ND LOOK	4534	252	REFL COLD CAL 2ND LOOK	0E
110	SCENE DATA BP 13 CH 1	16529	254	COLD CAL DATA 1 CH 1	0
112	CH 2	16467	256	CH 2	0
114	REFLECTOR POSITION 14	4534	258	COLD CAL DATA 2 CH 1	0
116	REFL POS 14 2ND LOOK	4534	260	CH 2	0
118	SCENE DATA BP 14 CH 1	16525	302	REFLECTOR WARM CAL POS	0E
120	CH 2	16467	304	REFL WARM CAL 2ND LOOK	0E
122	REFLECTOR POSITION 15	4534	306	WARM CAL DATA 1 CH 1	0
124	REFL POS 15 2ND LOOK	4534	308	CH 2	0
126	SCENE DATA BP 15 CH 1	16522	310	WARM CAL DATA 2 CH 1	0
128	CH 2	16469	312	CH 2	0
130	REFLECTOR POSITION 16	4534			
132	REFL POS 16 2ND LOOK	4534			
134	SCENE DATA BP 16 CH 1	16528			
136	CH 2	16464			

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE DEG C
262	SCAN MOTOR	16901	21.18
264	FEED HORN	17627	22.36
266	RF MUX	17997	23.13
268	MIXER/IF AMPLIFIER CHANNEL 1	18120	23.56
270	MIXER/IF AMPLIFIER CHANNEL 2	18188	23.79
272	LOCAL OSCILLATOR CHANNEL 1	17891	22.92
274	LOCAL OSCILLATOR CHANNEL 2	18490	24.12
276	COMPENSATION MOTOR	17034	21.04
278	SUB REFLECTOR	17539	22.46
280	DC/DC CONVERTER	18935	25.04
282	RF SHELF	17556	22.44
284	DETECTOR/PREAMP ASSEMBLY	17993	23.32
286	WARM LOAD CENTER	22190	21.13
288	WARM LOAD 1	22273	21.20
290	WARM LOAD 2	22162	21.04
292	WARM LOAD 3	22080	21.34
294	WARM LOAD 4	22145	20.88
296	WARM LOAD 5	22212	21.03
298	WARM LOAD 6	22577	21.07
300	TEMP SENSOR REFERENCE VOLTAGE	25001	

DESCRIPTION	STATUS	STATUS	STATUS
SCANNER POWER	ON	ON	ON
COMPENSATOR MOTOR POWER	ON	ON	ON
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	NO	NO	NO
ANTENNA IN NADIR POSITION MODE	YES	YES	YES
ANTENNA IN FULL SCAN MODE	NO	NO	NO
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	ON	ON	ON
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
RF SHELF TEMPERATURE	218	23.4	218	23.4	218	23.4
COMPENSATOR MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
SCANNER MOTOR TEMPERATURE	216	20.7	216	20.7	216	20.7
WARM LOAD TEMPERATURE	216	20.7	216	20.7	216	20.7

DESCRIPTION	VALUE	MA / VOLTS	VALUE	MA / VOLTS	VALUE	MA / VOLTS
ANTENNA DRIVE MOTOR CURRENT (AVERAGE)	5	2.73	5	2.73	5	2.73
COMPENSATOR MOTOR CURRENT (AVERAGE)	5	2.73	5	2.73	5	2.73
SIGNAL PROCESSING +15 VDC	173	15.09	172	15.00	172	15.00
ANTENNA DRIVE +15 VDC	172	14.57	172	14.57	172	14.57
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	150	-14.64	150	-14.64	150	-14.64
RECEIVER +10 VDC	174	10.06	174	10.06	174	10.06
RADIOMETER, RECEIVER, PROCESSOR +5 VDC	148	5.00	148	5.00	148	5.00
ANTENNA DRIVE +5 VDC	148	5.01	148	5.01	148	5.01
GUNN DIODE OSC #1 (CHANNEL 1) VDC	174	10.00	174	10.00	174	10.00
GUNN DIODE OSC #2 (CHANNEL 2) VDC	175	10.00	175	10.00	175	10.00

PRT TEMPERATURES

	NO.	DEG K	NO.	DEG K
VARIABLE TARGET	601	14.00	607	20.00
	602	15.00	608	21.00
	603	16.00	609	22.00
	604	17.00	610	23.00
	605	18.00	611	24.00
	606	19.00		
FIXED TARGET	612	39.00	618	45.00
	613	40.00	619	46.00
	614	41.00	620	47.00
	615	42.00	621	48.00
	616	43.00	622	49.00
	617	44.00		
BASEPLATE	623	25.00	625	50.00
	624	26.00	626	27.00

THERMOCOUPLE TEMPERATURES

	NO.	DEG K	NO.	DEG K
FIXED TARGET SHROUD	532	32.00	533	33.00
VARIABLE TARGET SHROUD	515	7.00	516	8.00
FIXED TARGET N2	502	30.00	503	31.00
VARIABLE TARGET N2	507	5.00	508	6.00
HEATER N2	505	1.00	506	2.00
FIXED TARGET FLOW METER	504	34.00		
VARIABLE TARGET FLOW METER	509	9.00		
BASEPLATE HEATER N2	510	3.00	511	4.00
BASEPLATE N2	512	36.00	513	37.00
BASEPLATE FLOW METER	514	35.00		
ADJUNCT RADIATORS	549	38.00	554	55.00
	542	10.00	556	57.00

AMSU A2-18 A2.EXE NADIR MODE 2-MAR-99 17:36:10 SCAN NUMBER 272

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 1

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16524	9	16524	17	16520	25	16520
2	16523	10	16523	18	16520	26	16520
3	16524	11	16524	19	16522	27	16524
4	16527	12	16521	20	16524	28	16525
5	16524	13	16521	21	16524	29	16522
6	16522	14	16522	22	16522	30	16527
7	16515	15	16520	23	16527	CC	0
8	16519	16	16521	24	16524	WC	0

[21] UP [22] DOWN

POWER [4] ON

SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TDS 30

AMSU A2-18 A2.EXE NADIR MODE 2-MAR-99 17:36:25 SCAN NUMBER 274

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 2

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16467	9	16468	17	16471	25	16465
2	16466	10	16473	18	16474	26	16463
3	16473	11	16465	19	16469	27	16466
4	16466	12	16470	20	16472	28	16472
5	16471	13	16470	21	16466	29	16465
6	16465	14	16470	22	16468	30	16466
7	16469	15	16473	23	16464	CC	0
8	16465	16	16469	24	16466	WC	0

[21] UP [22] DOWN

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT TOUCHSCREEN BUTTON 2

AMSU A2-1 A2.EXE NADIR MODE 2-MAR-99 36:36 SCAN NUMBER 275

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES

NO		DATA	TEMP C	NO		DATA	TEMP C
1	SCAN MOTOR	16913	21.20	11	RF SHELF	17568	22.47
2	FEED HORN	17633	22.37	12	DET/PREAMP	18011	23.36
3	RF MUX	18010	23.16	13	WARM LOAD CNTR	22183	21.11
4	MIXER IF CH 1	18136	23.59	14	WARM LOAD 1	22288	21.23
5	MIXER IF CH 2	18202	23.82	15	WARM LOAD 2	22176	21.06
6	LO CHANNEL 1	17906	22.95	16	WARM LOAD 3	22066	21.31
7	LO CHANNEL 2	18506	24.15	17	WARM LOAD 4	22160	20.91
8	COMP MOTOR	17023	21.01	18	WARM LOAD 5	22225	21.06
9	SUBREFLECTOR	17538	22.46	19	WARM LOAD 6	22562	21.04
10	DC/DC CONVERTER	18957	25.09		THERMAL REFERENCE	25001	

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TDS 30

SHEET 128 OF
NO. 1980

AE-26156/4C
17 Sep 98

TEST DATA SHEET 31
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
0262	Scan Motor		25 ± 15	P
0264	Feedhorn		25 ± 15	
0266	RF Mux		25 ± 15	
0268	Mixer I.F. Amp. Channel 1		25 ± 15	
0270	Mixer I.F. Amp. Channel 2		25 ± 15	
0272	Local Oscillator Channel 1		25 ± 15	
0274	Local Oscillator Channel 2		25 ± 15	
0276	Compensation Motor		25 ± 15	
0278	Subreflector		25 ± 15	
0280	DC/DC Converter		25 ± 15	
0282	RF Shelf		25 ± 15	
0284	Detector/Preamp Assembly		25 ± 15	
0286	Warm Load Center		25 ± 15	
0288	Warm Load 1		25 ± 15	
0290	Warm Load 2		25 ± 15	
0292	Warm Load 3		25 ± 15	
0294	Warm Load 4		25 ± 15	
0296	Warm Load 5		25 ± 15	
0298	Warm Load 6		25 ± 15	
0300	Temp Sensor V. Reference		**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** Count of 24,552 +1765, -1308.

91
30
3-3-99
AMSU 8 SEIT

METSAT/AMSU A2 System CPT P/N IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: 584763 ~~375766~~
S/N: 105

R. Hail 3-2-99
Test Systems Engineer Date

7A 262 3-4-99
Quality Control Date

J. F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

SHEET 129 OF ___
ECR NO. 1980

TEST DATA SHEET 32

Analog Telemetry Verification by Way of Connector J6 (Paragraph 3.2.4.3.5.1)

From	Description	To	Measured (volts)	Required (volts)	Pass/Fail
J6-02	RF Shelf A2 Temp.	J1-10	4.33V	3.5V ± 2V	P
J6-03	Comp. Motor Temp.	J1-10	4.33V	3.5V ± 2V	
J6-04	Warm Load A2 Temp.	J1-10	4.32V	3.5V ± 2V	
J6-22	A2 Scan Motor Temp.	J1-10	4.32V	3.5V ± 2V	
J6-08	Scan Motor Curr.	J2-03	2.13V	2.0V ± 1.0V	P
J6-09	+15V Antenna Drive	J2-03	3.47V	3.5V ± 0.5V	
J6-10	+5V Antenna Drive	J2-03	2.97V	3.0V ± 0.5V	
J6-11	+15V Signal Processing	J2-03	3.46V	3.5V ± 0.25V	
J6-12	+5V Signal Processing	J2-03	2.97V	3.0V ± 0.25V	
J6-13	L.O. Voltage Channel 1	J2-03	3.50V	3.5V ± 0.5V	
J6-27	Comp Motor Current	J2-03	2.03V	2.0V ± 1.0V	
J6-28	-15V Antenna Drive	J2-03	3.01V	3.0V ± 0.5V	
J6-29	-15V Signal Processing	J2-03	3.00V	3.0V ± 0.25V	
J6-30	L.O. Voltage Channel 2	J2-03	3.56V	3.5V ± 0.5V	
J6-34	Mixer/IF Voltage	J2-03	3.48V	3.5V ± 0.5V	

QC 16

3-3-99

METSAT/AMSU A2 System CPT P/N IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: ~~335766~~ 584763 S/N: 105

3-2-99
Test Systems Engineer Date

3-4-99
Customer Representative Date
(Flight Hardware Only)

3-4-99
Quality Control Date

TEST DATA SHEET 33
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.1)

Description	*	Measured (Deg. C)	Required (Deg. C)	Pass/Fail
A2 Scanner Motor	Temp	______	25 ± 15	P
A2 RF Shelf A2 Temp.	Temp	______	25 ± 15	
A2 Warm Load	Temp	______	25 ± 15	
A2 Compensator Motor	Temp	______	25 ± 15	
		(mAmps)	(mAmps)	
Ant A2 Drv Motor Current		38.71	150 mA max	P
Ant A2 Comp. Motor Current		36.58	150 mA max	P
		(Volts)	(Volts)	
Signal Processor	+15V	______	15.0V ± 0.75V	P
Antenna Drive	+15V	______	15.0V ± 1.5V	
Signal Processor	-15V	______	-15.0V ± 0.75V	
Antenna Drive	-15V	______	-15.0V ± 1.5V	
Mixer/IF	***	______	***____ ± 0.5V	
Signal Processor	+5V	______	5.0V ± 0.5V	
Antenna Drive	+5V	______	5.0V ± 0.6V	
L.O. #1	**	10.06	**____ ± 0.5V	
L.O. #2	**	~~9.97~~ 10.80	**____ ± 0.5V	

* Data from the printout sheet Page 8. Rewriting data on this space is optional.
** L.O. voltages from manufacturer data sheet for S/N 101 - S/N 104, +10V for S/N 105 - S/N 109.
*** Mixer/IF voltage: +8V for S/N 101 - S/N 104, +10V for S/N 105 - S/N 109.

METSAT/AMSU A2 System ~~CPT P/N~~ IS-1331200 Shop Order: ~~55166~~ 5847653 3-3-99 S/N: 105
Circle Test: 1st CPT **Final CPT** Sub CPT ______

R. Haid 3-2-99
Test Systems Engineer Date

3-4-99
Customer Representative Date
(Flight Hardware Only)

3-4-99
Quality Control Date

SHEET 31 OF ____
ECR NO. 1980

TEST DATA SHEET 34
Integrate/Hold and Dump Signal Verification (Paragraph 3.2.4.3.6.1)

ATTACH PHOTOGRAPH OR PLOT HERE

Parameter	Measured		Required	Pass/ Fail
Scope Channel-1: Integration/Hold				
Time (A)*	158	ms	158 ms ± 10%	P
Time (B)*	42.6	ms	42 ms ± 10%	P
Amplitude	5.0	V	5.0 V ± 0.2V	P
Scope Channel-2: Dump Signal				
Time (D)*	10.6	ms	9 ms to 15 ms	P
Amplitude	5.0	V	5.0 V ± 0.2V	P

* Refer to Figure 2 for waveform configuration.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT (Final CPT) Sub CPT ________

AMSU 8 SEIT

F. Galacgac 3-4-99
Customer Representative Date
(Flight Hardware Only)

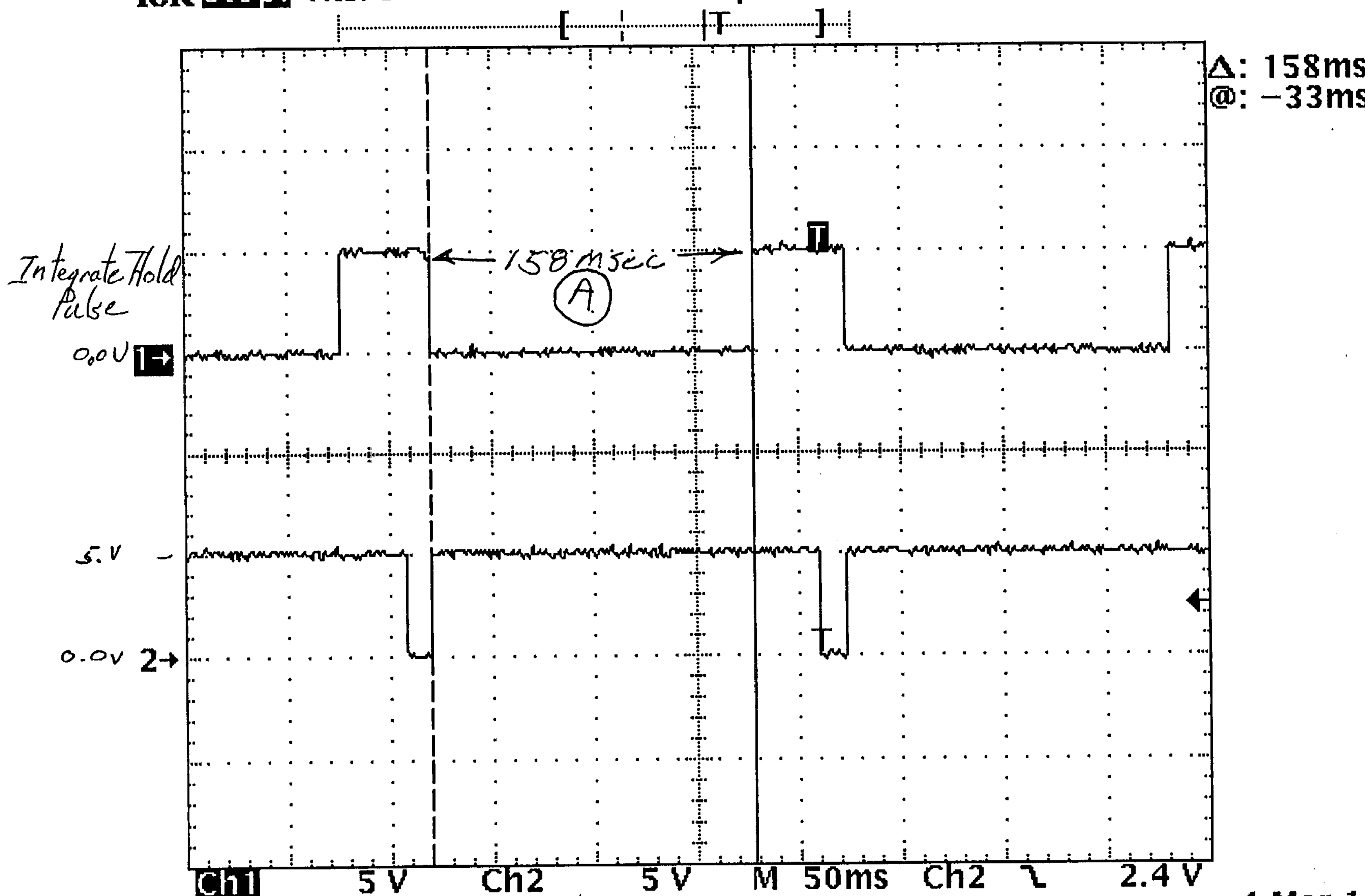
Test Systems Engineer 3-4-99 Date

7A 262
Quality Control 3-4-99 Date

```
AMSU  A2-1. A2.EXE       FULL SCAN MODE       2-MAR-99   .:41:19   SCAN NUMBER   310
[ 5 ] DIGITAL A DATA     ELEMENT 0000

[ 6 ] DIGITAL B DATA     ELEMENT   00

[ 7 ] ANALOG DATA        ELEMENT   00

                                  ANALOG DATA

 1 RF SHELF               217   22.09 DEG C  9 SIGNAL PROCESSING        -15VDC -14.97
 2 COMPENSATOR MOTOR      216   20.73 DEG C 10 ANTENNA DRIVE            -15VDC -14.64
 3 SCANNER MOTOR          216   20.73 DEG C 11 RECEIVER                 +10VDC  10.06
 4 WARM LOAD              216   20.73 DEG C 12 RAD/RECEIVER/SIG PROC    +5 VDC   5.00
 5 ANTENNA DRIVE MOTOR CURRENT      56.78 13 ANTENNA DRIVE              +5 VDC   5.01
 6 COMPENSATOR MOTOR CURRENT        54.60 14 GUNN DIODE OSC #1 CH 1        VDC  10.06
 7 SIGNAL PROCESSING       +15VDC   15.09 15 GUNN DIODE OSC #2 CH 2        VDC  10.00
 8 ANTENNA DRIVE           +15VDC   14.65

        POWER [ 4 ]  ON
                     SCREEN ONLY [ 2 ]  PRINT  [ 3 ] FULL     [ 1 ] RETURN
 SELECT TOUCHSCREEN BUTTON 2
```

TDS 33

Tek Stop: 1kS/s 20 Acqs



4 Mar 1999
14:23:15

32.4.3.6.1
Integrate Hold (A)

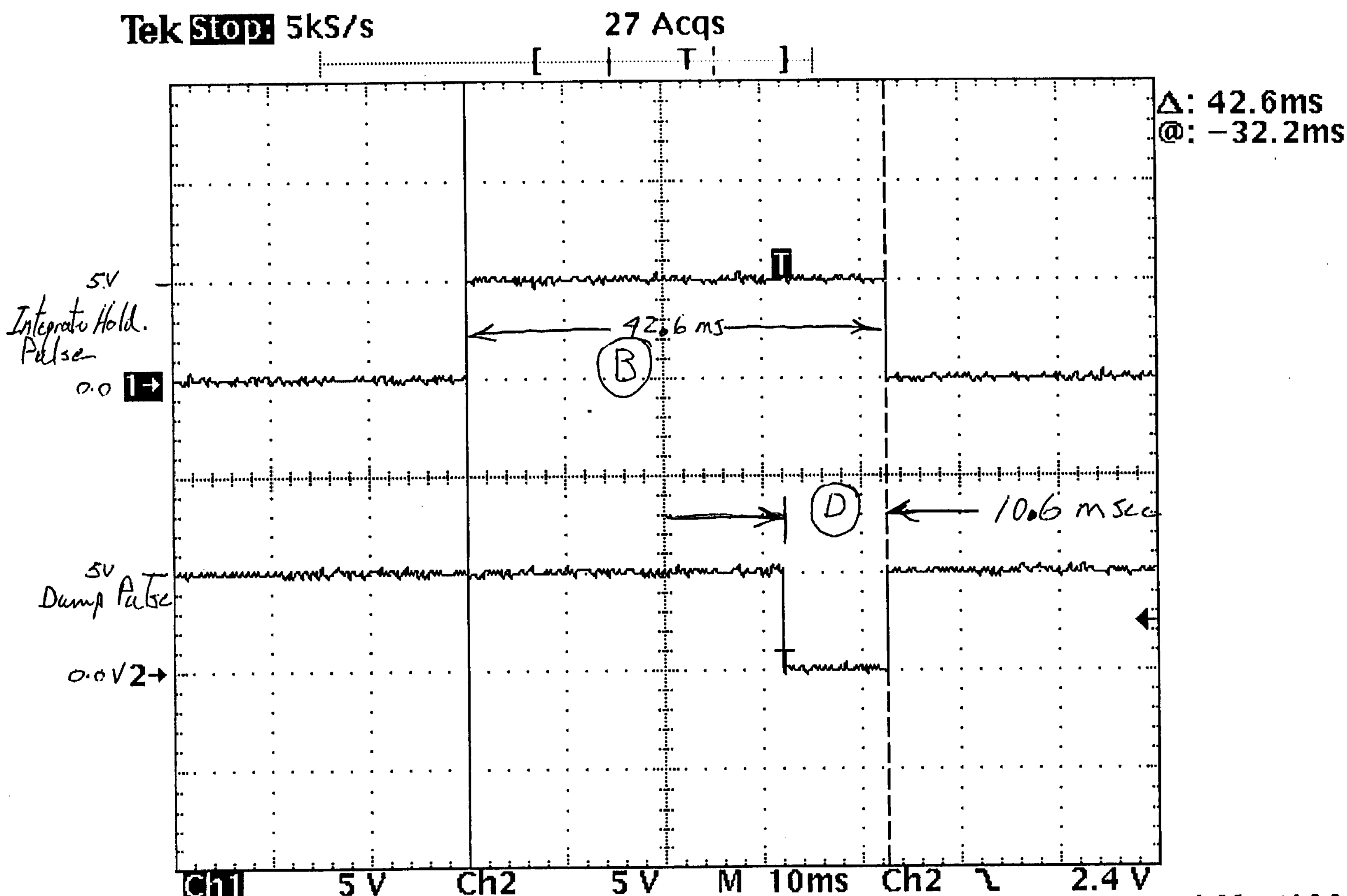
S/O: 584763
P/N: 133200-2-TST SN: 105

Test Eng: MSU 8 CEIT

Date: 3-4-99

Quality: 7A 262 3-4-99

E



3.2.4.3.6.1

S/O: 584763

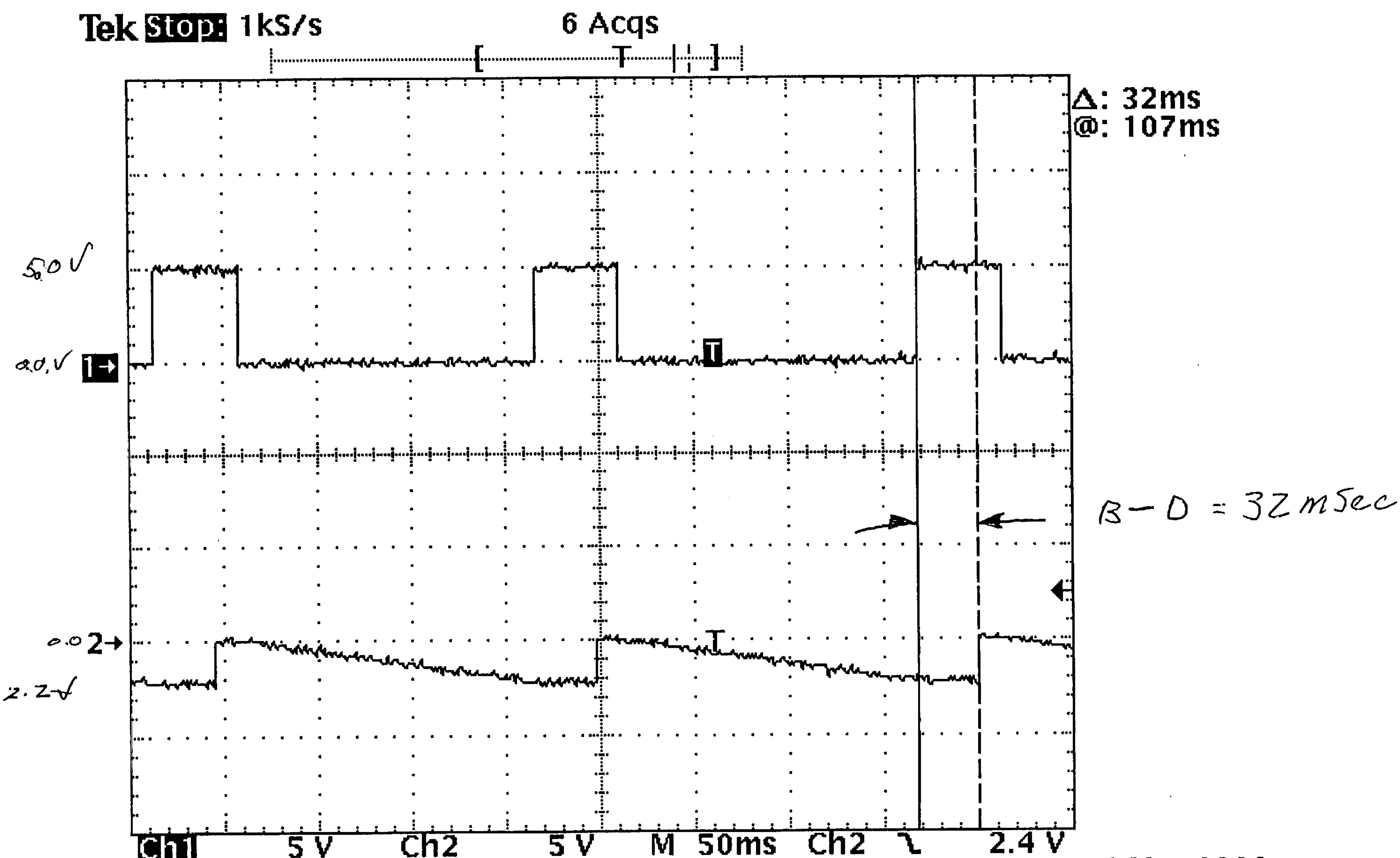
Integrate Hold Pulse / Dump Pulse

P/N: 133/200-2-TST SN: 105

TDS 34

Test Eng: Date: 3-4-99

Quality: 3-4-99

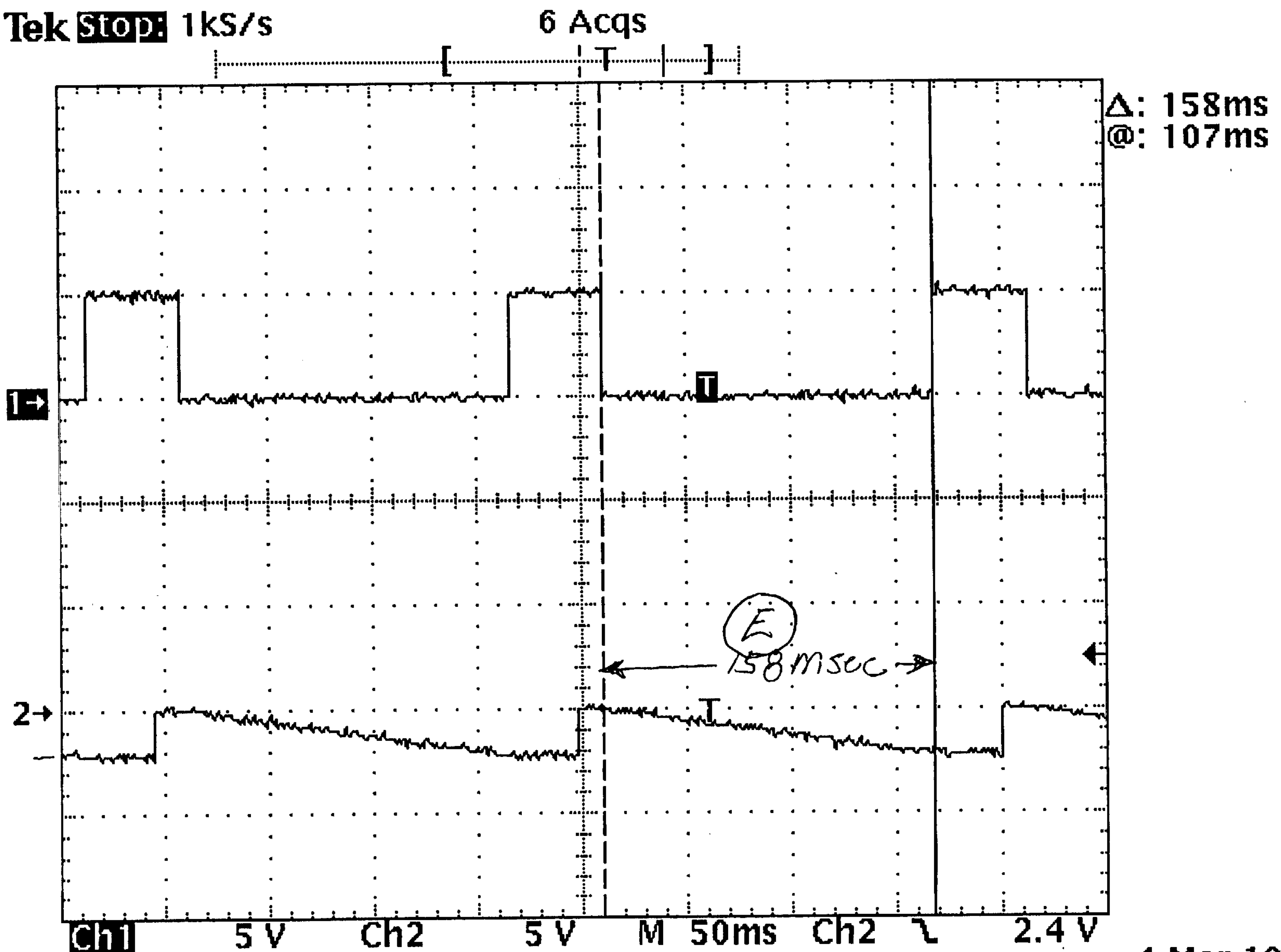


3.2 ∠ 3.62
B – D

4 Mar 1999
14:52:00

S/O: 584763
P/N: 133 1200-2-TST SN: 105
TDS-35

Test Eng: AMSU 8 SEIT Date: 3-4-99
Quality: 7A 262 3-4-99

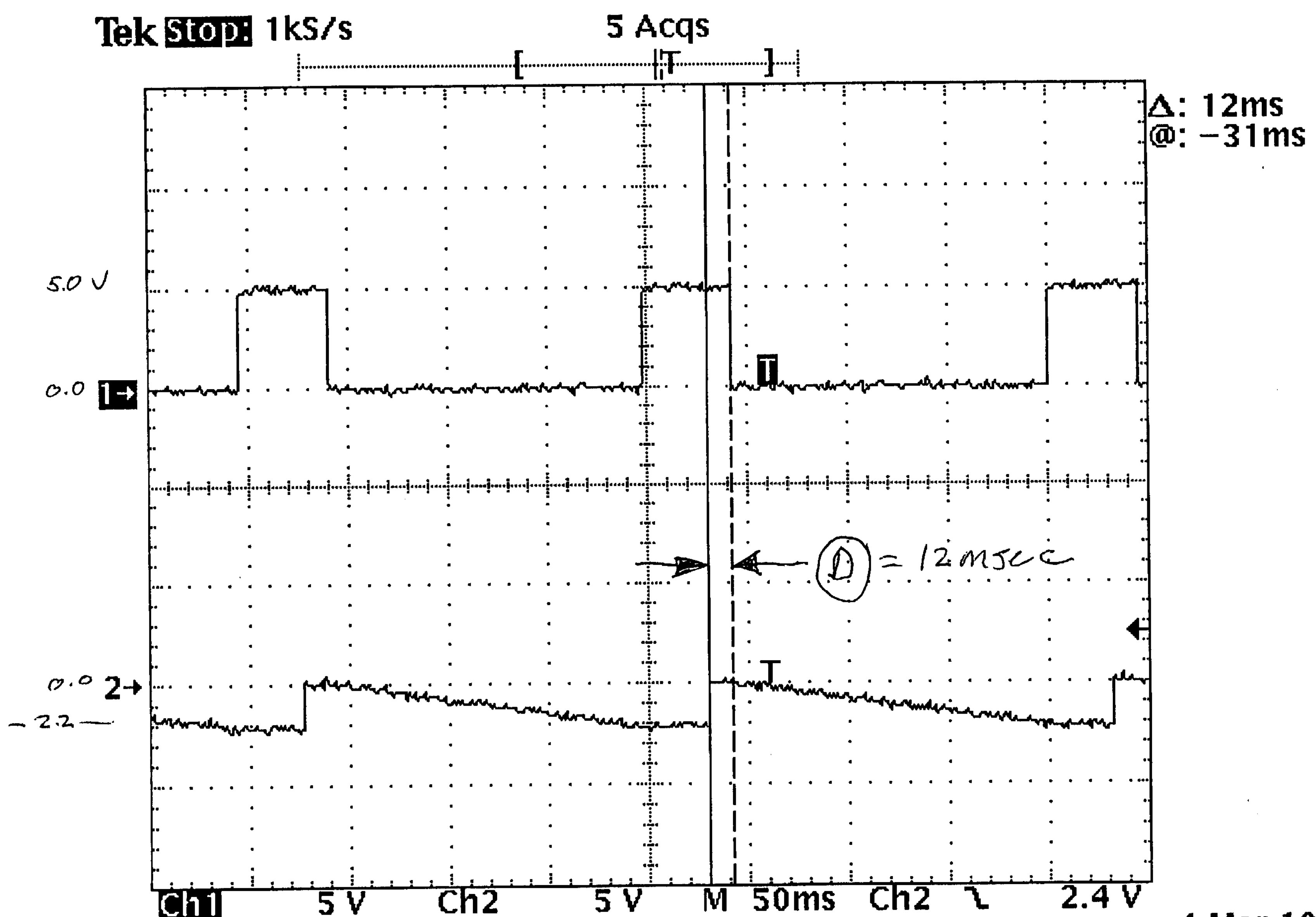


4 Mar 1999
14:41:12

3.2.4.3.6.2
Integration Time
TDS-35

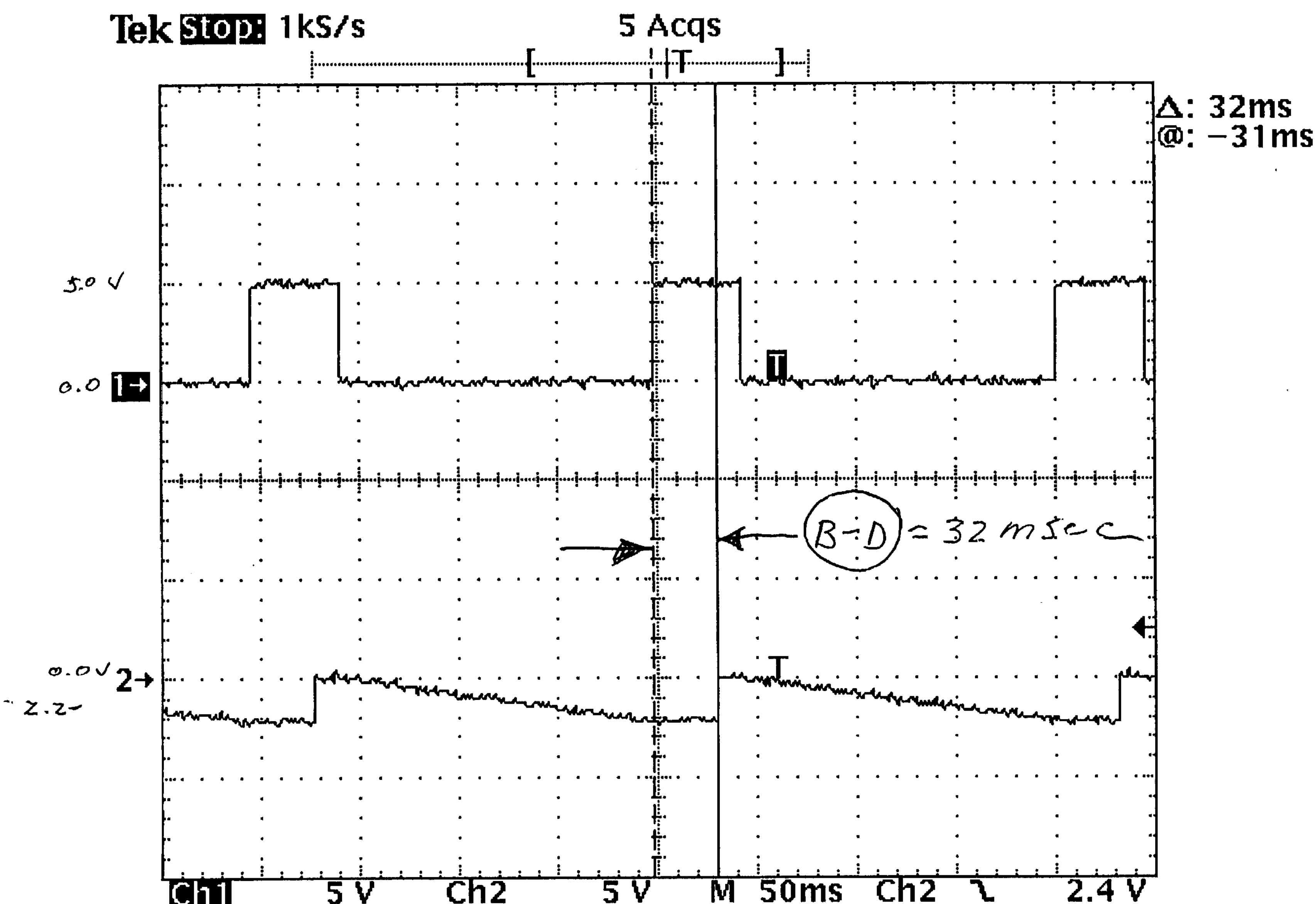
S/O: 584963
P/N: 1331200-2-TST SN: 105

Test Eng: AMSU 8 CERT Date: 3-4-99
Quality: 7A 262 3-4-99



4 Mar 1999
15:07:12

S/O: 584763
32 4 3.6.2 D
P/N: 133/200-2-IST SN: 105
TDS 35
Test Eng: ______ Date: 3-4-99
Quality: ______ 3-4-99

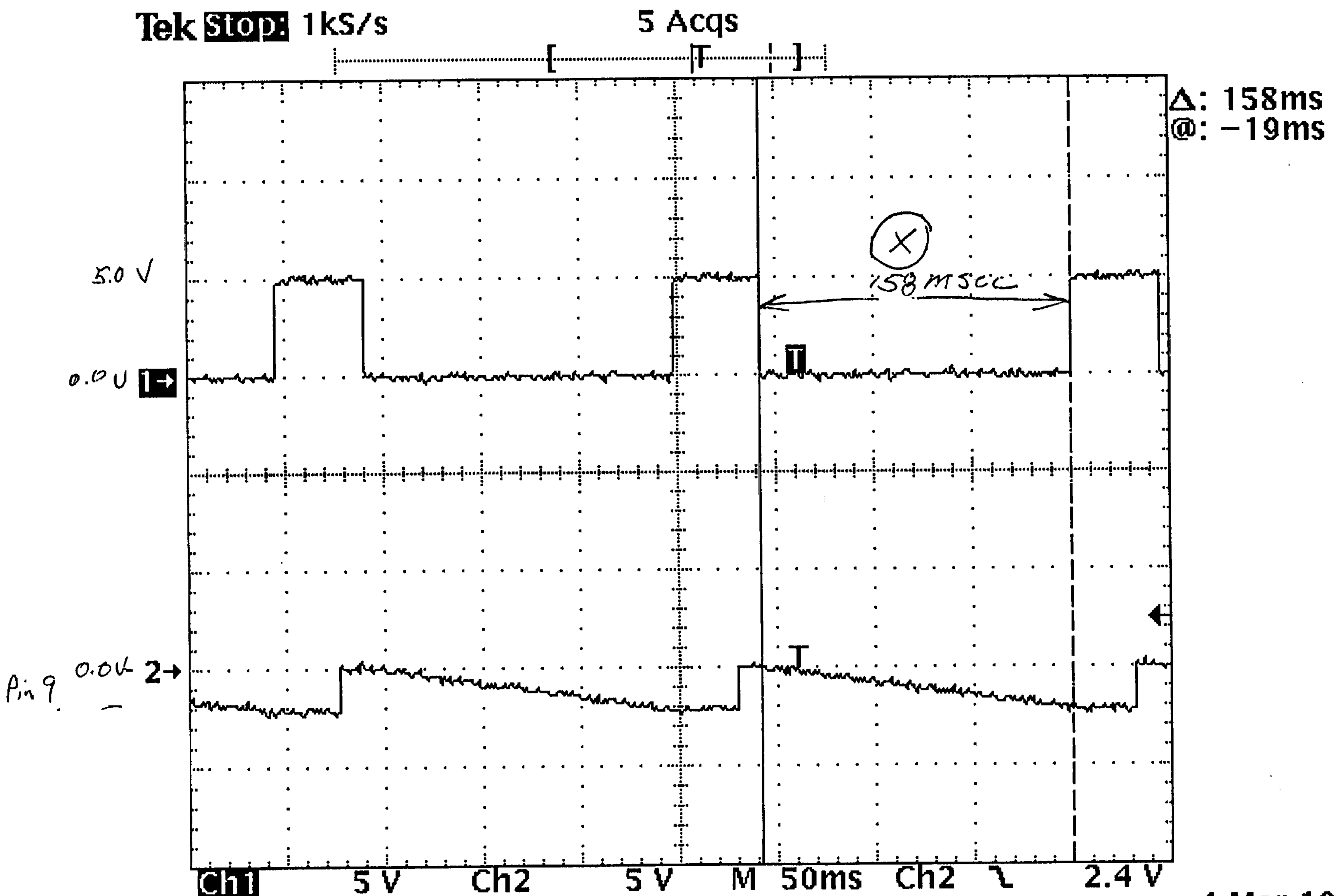


4 Mar 1999
15:02:52

S/O: 584763
P/N: 1331200-Z-TST SN: 105

32.4.3.6.2 Pin 9
B-D
TDS 35

Test Eng: AMSU 8 SEIT Date: 3-4-99
Quality: 7A 262 3-4-99



3.2.4.3.6.2

S/O: 584763

P/N: 133200-2-TST SN: 105

Test Eng: AMSU 8 SEIT Date: 3-4-99

Quality 7A 262 3.4.99

TEST DATA SHEET 35
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

J7 - pin 8 signal
Frequency: 23.8 GHz

INTEGRATION (X) *
Measured 158 ms
Required 158 ms ± 10%
Pass/Fail PASS

HOLD (B-D) **
Measured 32.0 ms
Required 32 ms ± 10%
Pass/Fail PASS

DUMP (D) *
Measured 10.6 ms
Required 9 ms to 15 ms
Pass/Fail PASS

ATTACH PHOTOGRAPH OR PLOT HERE

J7 - pin 9 signal
Frequency: 31.4 GHz

INTEGRATION (X) *
Measured 158 ms
Required 158 ms ± 10%
Pass/Fail PASS

HOLD (B-D) **
Measured 32.0 ms
Required 32 ms ± 10%
Pass/Fail PASS

DUMP (D) *
Measured 12.0 ms
Required 9 ms to 15 ms
Pass/Fail PASS

* Refer to Figure 2 for waveform configuration.
** Refer to Data Sheet 34 and Figure 2.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 584763 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________

AMSU 8 SEIT

3/4/99
Test Systems Engineer Date

[signature] 3-4-99 7A 262 3-4-99
Customer Representative Date Quality Control Date
(Flight Hardware Only)

N/A per Table II
RH Platt 3/4/99

SHEET 133 OF ___
ECR NO. 1980

TEST DATA SHEET 36
Digital-A/GSE Mode-1 Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.7.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital B Data Byte 1		0	
	0006	Digital B Data Byte 2		6	
	0007	Digital B Data Byte 3		0	
	0008	Digital B Data Byte 4		0	

* AMSU A2 Identification Words (data entered in decimal system)

	Binary	Decimal
AMSU-A2 S/N 101	00000010	2
AMSU-A2 S/N 102	00000110	6
AMSU-A2 S/N 103	00001010	10
AMSU-A2 S/N 104	00001110	14
AMSU-A2 S/N 105	00010010	18
AMSU-A2 S/N 106	00010110	22
AMSU-A2 S/N 107	00011010	26
AMSU-A2 S/N 108	00011110	30
AMSU-A2 S/N 109	00100010	34

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ________ S/N: ________
Circle Test: 1st CPT Final CPT Sub CPT ________

____
Test Systems Engineer Date

____
Quality Control Date

N/A per TABLE II
RH [illegible] 3/4/99

3-4-99

TEST DATA SHEET 37 (Sheet 1 of 2)
Digital A/GSE Modes-1-4 Reflector Position Section [IV] (Paragraphs 3.2.4.3.7.2 - 3.2.4.3.7.5)

3.2.4.3.7.2 Digital A/GSE Mode-1 Reflector Position Section [IV]

BP	Reflector			
	Note	Position*	Required**	Pass/Fail
06	1st 10 data			
WL	2nd 10 data			
CL	3rd 10 data			

3.2.4.3.7.3 Digital A/GSE Mode-2 Reflector Position Section [IV]

BP	Reflector		
	Position*	Required**	Pass/Fail
01			

3.2.4.3.7.4 Digital A/GSE Mode-3 Reflector Position Section [IV]

BP	Reflector		
	Position*	Required**	Pass/Fail
***			

3.2.4.3.7.5 Digital A/GSE Mode-4 Reflector Position Section [IV]

BP	Reflector		
	Position*	Required**	Pass/Fail
30			

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required position from TDS 6 of AE-26002/2 ±5 counts.
*** Current Position

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ________ S/N: ________
Circle Test: 1st CPT Final CPT Sub CPT ________

Test Systems Engineer Date

Customer Representative (Flight Hardware Only) Date

Quality Control Date

N/A per Table II

RJ Plett 3/4/99

SHEET 135 OF ___
ECR NO. 1980

TEST DATA SHEET 37 (Sheet 2 of 2)
Digital A/GSE Modes-1-4 Reflector Position Section [IV] (Paragraphs 3.2.4.3.7.2 - 3.2.4.3.7.5)

3.2.4.3.7.6 Digital A/GSE Mode-5 Reflector Position Section [IV]

BP	Reflector		
	Position*	Required**	Pass/Fail
06			

3.2.4.3.7.7 Digital A/GSE Mode-7 Reflector Position Section [IV]

BP	Reflector		
	Position*	Required**	Pass/Fail
06			

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required position from TDS 6 of AE-26002/2 ±5 counts.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ________ S/N: ________
Circle Test: 1st CPT Final CPT Sub CPT ________

Test Systems Engineer Date

Customer Representative (Flight Hardware Only) Date

Quality Control Date

N/A per TABLE II
RH Platt 3/4/99 3/4/99

SHEET 136 OF
ECR NO. 1980

TEST DATA SHEET 38
Digital A/GSE Mode-1 Radiometer Data Section [V] (Paragraph 3.2.4.3.7.2)

BP	Channel-1 (23.8 GHz)		
	Measured*	Required**	Pass/Fail
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
CC ~~CL~~		0	
WC ~~WL~~		0	

11/23/98

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required = 16,500 ± 4000 counts.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ________ S/N: ________
Circle Test: 1st CPT Final CPT Sub CPT ________

Test Systems Engineer Date

Quality Control Date

N/A Per Table II
RJ Plato 3/4/99 3-4-99

AE-26156/4C
17 Sep 98

SHEET 137 OF ____
ECR NO. 1980

TEST DATA SHEET 39
Digital A/GSE Mode-1 Temperature Sensors Section [VI] (Paragraph 3.2.4.3.7.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
0262	Scan Motor		25 ± 15	
0264	Feedhorn		25 ± 15	
0266	RF Mux		25 ± 15	
0268	Mixer I.F. Amp. Channel 1		25 ± 15	
0270	Mixer I.F. Amp. Channel 2		25 ± 15	
0272	Local Oscillator Channel 1		25 ± 15	
0274	Local Oscillator Channel 2		25 ± 15	
0276	Compensation Motor		25 ± 15	
0278	Subreflector		25 ± 15	
0280	DC/DC Converter		25 ± 15	
0282	RF Shelf		25 ± 15	
0284	Detector/Preamp Assembly		25 ± 15	
0286	Warm Load Center		25 ± 15	
0288	Warm Load 1		25 ± 15	
0290	Warm Load 2		25 ± 15	
0292	Warm Load 3		25 ± 15	
0294	Warm Load 4		25 ± 15	
0296	Warm Load 5		25 ± 15	
0298	Warm Load 6		25 ± 15	
0300	Temp Sensor V. Reference		**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** Count of 24,552 +1765, -1308.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ________ S/N: ________
Circle Test: 1st CPT Final CPT Sub CPT ________

Test Systems Engineer Date

Quality Control Date

TEST DATA SHEET 40
Radiometer Relative NEΔT Verification (Paragraph 3.2.4.4.1)

Channel	Channel 1	Channel 2
NEΔT (Average of 5 data)	.194	.175
NEΔT (specified)*	0.30 K	0.30 K
Pass/Fail**	P	P

* For reference only.
** Use first CPT or first LPT data along with specified value for pass fail criteria.

METSAT/AMSU A2 System CPT P/N IS-1331200
Circle Test: 1st CPT Final CPT Sub CPT ________

Shop Order: ~~33166~~ 58-47635 3-3-99 AMSU 9 SEIT S/N: 105

R. Hai 3-2-99
Test Systems Engineer Date

7A 262 3-4-99
Quality Control Date

J. Halacgaa 3-4-99
Customer Representative Date
(Flight Hardware Only)

N/A per table II 3-4-99

AE-26156/4C R W Platt 3/4/99
17 Sep 98

SHEET 139 OF ___
ECF NO. 1980

TEST DATA SHEET 41
Transient Susceptibility Test (Paragraph 3.2.4.5)

Test Setup Verified: ____________
Signature

3.2.4.5.3.2 +28V Main Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/ Observations
3.2.4.5.3.2.1	4	Low frequency in accordance with Figure 22		
3.2.4.5.3.2.2	4	High frequency in accordance with Table IV		

3.2.4.5.3.3 +28V Pulse Load Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/ Observations
3.2.4.5.3.3.1	4	Low frequency in accordance with Figure 23		
3.2.4.5.3.3.2	4	High frequency in accordance with Table IV		

3.2.4.5.3.4 +28V Analog Telemetry Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/ Observations
3.2.4.5.3.4.1	4	Low frequency in accordance with Figure 22		
3.2.4.5.3.4.2	4	High frequency in accordance with Table IV		

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional comments or observations, etc.) to this data sheet.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: ________ S/N: ________
Circle Test: 1st CPT Final CPT Sub CPT ________

________________________ Test Systems Engineer Date

Customer Representative (Flight Hardware Only) Date

________________________ Quality Control Date

A2 FUNCTIONAL TEST RESULTS
A2.EXE 2-MAR-99 18:10:55

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	294.43	16500.0	13811.0	0.080	0.179
2	294.43	16438.0	13006.0	0.062	0.159

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

TDS 40

A2 FUNCTIONAL TEST RESULTS
A2.EXE 2-MAR-99 18:12:15

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	294.43	16495.0	13804.0	0.080	0.196
2	294.43	16436.0	12995.0	0.062	0.205

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

A2 FUNCTIONAL TEST RESULTS
A2.EXE 2-MAR-99 18:14:07

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	294.41	16485.0	13800.0	0.080	0.214
2	294.41	16431.0	12991.0	0.062	0.169

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

A2 FUNCTIONAL TEST RESULTS

A2.EXE 2-MAR-99 18:15:11

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	294.39	16484.0	13796.0	0.080	0.182
2	294.39	16432.0	12990.0	0.062	0.161

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

A2 FUNCTIONAL TEST RESULTS

A2.EXE 2-MAR-99 18:16:15

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	294.39	16479.0	13796.0	0.080	0.203
2	294.39	16427.0	12992.0	0.062	0.182

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

N/A per TABLE II 3-4-99
R.H. Platt 3/4/99

TEST DATA SHEET 42
Instrument Feedback Tests (Paragraph 3.2.4.6)

Test Setup Verified: ____________________
Signature

3.2.4.6.3.2 +28V Main Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured mA Ripple	Pass/Fail
3.2.4.6.3.2	2-4	Load current ripple	See 3.2.4.6.2.1.1	Value: ____	

3.2.4.6.3.3 +28V Pulse Load Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured	Pass/Fail
3.2.4.6.3.3	2-5	Load current ripple	See 3.2.4.6.2.2.1	Value: ____	

3.2.4.6.3.4 +28V Analog Telemetry Bus Instr. Feedback Tests

Subpara	Step	Test Type	Required	Measured	Pass/Fail
3.2.4.6.3.4	2-5	Load current ripple	See 3.2.4.6.2.3.1	Value: ____	

3.2.4.6.3.5 +10V Interface Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured	Pass/Fail
3.2.4.6.3.5	2-5	Load current ripple	See 3.2.4.6.2.4.1	Value: ____	

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional comments or observations, etc.) to this data sheet.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: __________ S/N: __________
Circle Test: 1st CPT Final CPT Sub CPT __________

Test Systems Engineer Date

Customer Representative (Flight Hardware Only) Date

Quality Control Date

SHEET 141 OF
NO 1980

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APPENDIX A

ADDITIONAL TESTS

```
AMSU  A2-18 A2.EXE     FULL SCAN MODE      11-MAR-99  10:17:11  SCAN NUMBER     22
[ 5 ] DIGITAL A DATA   ELEMENT 0000
[ 6 ] DIGITAL B DATA   ELEMENT   00
[ 7 ] ANALOG DATA      ELEMENT   00

                                   COMMANDS
[ 9 ]  MODULE POWER =            CONNECT   ANTENNA IN COLD CAL POSIT = NO   [ 15 ]
[ 10 ] SURVIVAL HEATER POWER =       OFF   ANTENNA IN NADIR POSITION = NO   [ 16 ]
[ 11 ] MODULE TOTALLY OFF =          ON    ANTENNA IN FULL SCAN MODE = YES  [ 17 ]
[ 12 ] SCANNER A2 POWER =            ON    COLD CAL POSITION MSB =     ZERO [ 18 ]
[ 13 ] COMPENSATOR MOTOR POWER =     ON    COLD CAL POSITION LSB =     ZERO [ 19 ]
[ 14 ] ANTENNA IN WARM CAL POSIT = NO
         POWER [ 4 ]  ON
                      SCREEN ONLY [ 2 ]  PRINT  [ 3 ] FULL        [ 1 ] RETURN
 SELECT_TOUCHSCREEN_BUTTON 3
```

TPS 18

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	138	REFLECTOR POSITION 17	4229
2	SYNC SEQUENCE BYTE 2	11111111	140	REFL POS 17 2ND LOOK	4233
3	SYNC SEQUENCE BYTE 3	11111111	142	SCENE DATA BP 17 CH 1	16567
4	UNIT ID AND SERIAL NO	00010010	144	CH 2	16488
5	DIGITAL B DATA BYTE 1	00000010	146	REFLECTOR POSITION 18	4078
6	DIGITAL B DATA BYTE 2	00000110	148	REFL POS 18 2ND LOOK	4082
7	DIGITAL B DATA BYTE 3	00000000	150	SCENE DATA BP 18 CH 1	16570
8	DIGITAL B DATA BYTE 4	00000000	152	CH 2	16495
10	REFLECTOR POSITION 1	6655	154	REFLECTOR POSITION 19	3926
12	REFL POS 1 2ND LOOK	6655	156	REFL POS 19 2ND LOOK	3930
14	SCENE DATA BP 1 CH 1	16571	158	SCENE DATA BP 19 CH 1	16569
16	CH 2	16494	160	CH 2	16497
18	REFLECTOR POSITION 2	6505	162	REFLECTOR POSITION 20	3775
20	REFL POS 2 2ND LOOK	6507	164	REFL POS 20 2ND LOOK	3778
22	SCENE DATA BP 2 CH 1	16569	166	SCENE DATA BP 20 CH 1	16570
24	CH 2	16479	168	CH 2	16491
26	REFLECTOR POSITION 3	6352	170	REFLECTOR POSITION 21	3623
28	REFL POS 3 2ND LOOK	6355	172	REFL POS 21 2ND LOOK	3627
30	SCENE DATA BP 3 CH 1	16567	174	SCENE DATA BP 21 CH 1	16570
32	CH 2	16487	176	CH 2	16491
34	REFLECTOR POSITION 4	6201	178	REFLECTOR POSITION 22	3472
36	REFL POS 4 2ND LOOK	6204	180	REFL POS 22 2ND LOOK	3476
38	SCENE DATA BP 4 CH 1	16570	182	SCENE DATA BP 22 CH 1	16568
40	CH 2	16490	184	CH 2	16493
42	REFLECTOR POSITION 5	6051	186	REFLECTOR POSITION 23	3321
44	REFL POS 5 2ND LOOK	6052	188	REFL POS 23 2ND LOOK	3324
46	SCENE DATA BP 5 CH 1	16564	190	SCENE DATA BP 23 CH 1	16570
48	CH 2	16480	192	CH 2	16491
50	REFLECTOR POSITION 6	5898	194	REFLECTOR POSITION 24	3169
52	REFL POS 6 2ND LOOK	5900	196	REFL POS 24 2ND LOOK	3172
54	SCENE DATA BP 6 CH 1	16567	198	SCENE DATA BP 24 CH 1	16566
56	CH 2	16494	200	CH 2	16488
58	REFLECTOR POSITION 7	5747	202	REFLECTOR POSITION 25	3017
60	REFL POS 7 2ND LOOK	5749	204	REFL POS 25 2ND LOOK	3021
62	SCENE DATA BP 7 CH 1	16564	206	SCENE DATA BP 25 CH 1	16568
64	CH 2	16492	208	CH 2	16487
66	REFLECTOR POSITION 8	5594	210	REFLECTOR POSITION 26	2865
68	REFL POS 8 2ND LOOK	5597	212	REFL POS 26 2ND LOOK	2869
70	SCENE DATA BP 8 CH 1	16568	214	SCENE DATA BP 26 CH 1	16562
72	CH 2	16495	216	CH 2	16483
74	REFLECTOR POSITION 9	5441	218	REFLECTOR POSITION 27	2712
76	REFL POS 9 2ND LOOK	5445	220	REFL POS 27 2ND LOOK	2716
78	SCENE DATA BP 9 CH 1	16567	222	SCENE DATA BP 27 CH 1	16562
80	CH 2	16490	224	CH 2	16486
82	REFLECTOR POSITION 10	5291	226	REFLECTOR POSITION 28	2560
84	REFL POS 10 2ND LOOK	5294	228	REFL POS 28 2ND LOOK	2563
86	SCENE DATA BP 10 CH 1	16570	230	SCENE DATA BP 28 CH 1	16568
88	CH 2	16494	232	CH 2	16488
90	REFLECTOR POSITION 11	5140	234	REFLECTOR POSITION 29	2410
92	REFL POS 11 2ND LOOK	5142	236	REFL POS 29 2ND LOOK	2413

ELEMENT	DESCRIPTION	VALUE
94	SCENE DATA BP 11 CH 1	16568
96	CH 2	16489
98	REFLECTOR POSITION 12	4987
100	REFL POS 12 2ND LOOK	4990
102	SCENE DATA BP 12 CH 1	16567
104	CH 2	16497
106	REFLECTOR POSITION 13	4836
108	REFL POS 13 2ND LOOK	4839
110	SCENE DATA BP 13 CH 1	16569
112	CH 2	16486
114	REFLECTOR POSITION 14	4685
116	REFL POS 14 2ND LOOK	4687
118	SCENE DATA BP 14 CH 1	16572
120	CH 2	16493
122	REFLECTOR POSITION 15	4533
124	REFL POS 15 2ND LOOK	4536
126	SCENE DATA BP 15 CH 1	16572
128	CH 2	16506
130	REFLECTOR POSITION 16	4383
132	REFL POS 16 2ND LOOK	4384
134	SCENE DATA BP 16 CH 1	16572
136	CH 2	16506

ELEMENT	DESCRIPTION	VALUE
238	SCENE DATA BP 29 CH 1	16565
240	CH 2	16492
242	REFLECTOR POSITION 30	2257
244	REFL POS 30 2ND LOOK	2261
246	SCENE DATA BP 30 CH 1	16569
248	CH 2	16495
250	REFLECTOR COLD CAL POS	665
252	REFL COLD CAL 2ND LOOK	665
254	COLD CAL DATA 1 CH 1	16550
256	CH 2	16475
258	COLD CAL DATA 2 CH 1	16547
260	CH 2	16475
302	REFLECTOR WARM CAL POS	12650
304	REFL WARM CAL 2ND LOOK	12650
306	WARM CAL DATA 1 CH 1	16549
308	CH 2	16477
310	WARM CAL DATA 2 CH 1	16545
312	CH 2	16482

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE DEG C
262	SCAN MOTOR	16576	20.55
264	FEED HORN	16978	21.12
266	RF MUX	17022	21.26
268	MIXER/IF AMPLIFIER CHANNEL 1	16977	21.36
270	MIXER/IF AMPLIFIER CHANNEL 2	17034	21.57
272	LOCAL OSCILLATOR CHANNEL 1	16791	20.81
274	LOCAL OSCILLATOR CHANNEL 2	17197	21.63
276	COMPENSATION MOTOR	16563	20.14
278	SUB REFLECTOR	17089	21.59
280	DC/DC CONVERTER	16924	21.16
282	RF SHELF	16646	20.70
284	DETECTOR/PREAMP ASSEMBLY	16969	21.35
286	WARM LOAD CENTER	21834	20.43
288	WARM LOAD 1	21938	20.54
290	WARM LOAD 2	21831	20.39
292	WARM LOAD 3	21721	20.63
294	WARM LOAD 4	21821	20.25
296	WARM LOAD 5	21888	20.39
298	WARM LOAD 6	22219	20.36
300	TEMP SENSOR REFERENCE VOLTAGE	24997	

DESCRIPTION	STATUS	STATUS	STATUS
SCANNER POWER	ON	ON	ON
COMPENSATOR MOTOR POWER	ON	ON	ON
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	NO	NO	NO
ANTENNA IN NADIR POSITION MODE	NO	NO	NO
ANTENNA IN FULL SCAN MODE	YES	YES	YES
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	ON	ON	ON
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
RF SHELF TEMPERATURE	215	19.4	215	19.4	215	19.4
COMPENSATOR MOTOR TEMPERATURE	215	19.4	216	20.7	216	20.7
SCANNER MOTOR TEMPERATURE	216	20.7	215	19.4	216	20.7
WARM LOAD TEMPERATURE	216	20.7	215	19.4	216	20.7

DESCRIPTION	VALUE	MA / VOLTS	VALUE	MA / VOLTS	VALUE	MA / VOLTS
ANTENNA DRIVE MOTOR CURRENT (AVERAGE)	111	126.10	112	127.23	111	126.10
COMPENSATOR MOTOR CURRENT (AVERAGE)	107	121.55	109	123.82	107	121.55
SIGNAL PROCESSING +15 VDC	172	15.00	172	15.00	172	15.00
ANTENNA DRIVE +15 VDC	176	14.91	178	15.08	177	14.99
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	155	-14.80	156	-14.83	155	-14.80
RECEIVER +10 VDC	173	10.00	173	10.00	173	10.00
RADIOMETER, RECEIVER, PROCESSOR +5 VDC	149	5.03	149	5.03	149	5.03
ANTENNA DRIVE +5 VDC	152	5.14	154	5.21	153	5.18
GUNN DIODE OSC #1 (CHANNEL 1) VDC	174	10.00	174	10.00	174	10.00
GUNN DIODE OSC #2 (CHANNEL 2) VDC	174	9.94	174	9.94	174	9.94

PRT TEMPERATURES

	NO.	DEG K	NO.	DEG K
VARIABLE TARGET	601	14.00	607	20.00
	602	15.00	608	21.00
	603	16.00	609	22.00
	604	17.00	610	23.00
	605	18.00	611	24.00
	606	19.00		
FIXED TARGET	612	39.00	618	45.00
	613	40.00	619	46.00
	614	41.00	620	47.00
	615	42.00	621	48.00
	616	43.00	622	49.00
	617	44.00		
BASEPLATE	623	25.00	625	50.00
	624	26.00	626	27.00

THERMOCOUPLE TEMPERATURES

	NO.	DEG K	NO.	DEG K
FIXED TARGET SHROUD	532	32.00	533	33.00
VARIABLE TARGET SHROUD	515	7.00	516	8.00
FIXED TARGET N2	502	30.00	503	31.00
VARIABLE TARGET N2	507	5.00	508	6.00
HEATER N2	505	1.00	506	2.00
FIXED TARGET FLOW METER	504	34.00		
VARIABLE TARGET FLOW METER	509	9.00		
BASEPLATE HEATER N2	510	3.00	511	4.00
BASEPLATE N2	512	36.00	513	37.00
BASEPLATE FLOW METER	514	35.00		
ADJUNCT RADIATORS	549	38.00	554	55.00
	542	10.00	556	57.00

TEST DATA SHEET 19
Reflector Positions Section [IV] (Paragraph 3.2.4.3.4.1)

BP	A2 Reflector		
	Position*	Required**	Pass/Fail
01			P
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
CC			
WC			

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required position data from TDS 6 of AE-26002/2 ±5 counts.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 415774 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________ oper. 0070

R. Hays 3/11/99
Test Systems Engineer Date

200 3/11/99
Quality Control Date

3/12/99
Customer Representative Date
(Flight Hardware Only)

AMSU A2-18 A2.EXE FULL SCAN MODE 11-MAR-99 10:20:54 SCAN NUMBER 50

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS

BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	6654	6655	9	5441	5445	17	4228	4233	25	3017	3021
2	6505	6507	10	5290	5293	18	4078	4081	26	2864	2869
3	6351	6356	11	5139	5142	19	3926	3930	27	2712	2716
4	6201	6204	12	4987	4990	20	3775	3778	28	2560	2565
5	6050	6052	13	4836	4839	21	3622	3627	29	2411	2413
6	5898	5900	14	4686	4688	22	3472	3476	30	2256	2261
7	5747	5749	15	4533	4536	23	3321	3324	CC	665	665
8	5594	5597	16	4382	4385	24	3168	3172	WC	12650	12650

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

~~FDS 20~~ R. Hai? 3/11/99 QC 16

TDS 19

TEST DATA SHEET 20

Digital-A Data Output Radiometer Data Section [V] (Paragraph 3.2.4.3.4.1)

BP	Channel-1 (23.8 GHz)			Channel-2 (31.4 GHz)		
	Measured*	Required**	Pass/~~Fail~~	Measured*	Required**	Pass/~~Fail~~
01			P			P
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
CC						
WC						

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required = 16,500 ± 4000 counts.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 415774 S/N: 105

Circle Test: 1st CPT Final CPT Sub CPT ________ oper. 0070

R. Haig 3/11/99

Test Systems Engineer Date

200 3/12/99

Quality Control Date

3/12/99

Customer Representative (Flight Hardware Only) Date

AMSU A2-18 A2.EXE FULL SCAN MODE 11-MAR-99 10:20:22 SCAN NUMBER 46

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 1

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16516	9	16525	17	16523	25	16515
2	16518	10	16520	18	16523	26	16517
3	16523	11	16518	19	16523	27	16524
4	16524	12	16521	20	16521	28	16526
5	16516	13	16518	21	16527	29	16526
6	16519	14	16528	22	16525	30	16526
7	16521	15	16528	23	16524	CC	16506
8	16519	16	16524	24	16520	WC	16501

[21] UP [22] DOWN

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TD520

AMSU A2-18 A2.EXE FULL SCAN MODE 11-MAR-99 10:20:37 SCAN NUMBER 48

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 2

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16468	9	16468	17	16462	25	16461
2	16458	10	16472	18	16466	26	16463
3	16463	11	16473	19	16470	27	16465
4	16464	12	16471	20	16470	28	16471
5	16458	13	16465	21	16466	29	16470
6	16468	14	16474	22	16473	30	16468
7	16466	15	16487	23	16465	CC	16451
8	16470	16	16475	24	16462	WC	16456

[21] UP [22] DOWN

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 21
Full Scan Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.1)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
0262	Scan Motor		25 ± 15	P
0264	Feedhorn		25 ± 15	
0266	RF Mux		25 ± 15	
0268	Mixer I.F. Amp. Channel 1		25 ± 15	
0270	Mixer I.F. Amp. Channel 2		25 ± 15	
0272	Local Oscillator Channel 1		25 ± 15	
0274	Local Oscillator Channel 2		25 ± 15	
0276	Compensation Motor		25 ± 15	
0278	Subreflector		25 ± 15	
0280	DC/DC Converter		25 ± 15	
0282	RF Shelf		25 ± 15	
0284	Detector/Preamp Assembly		25 ± 15	
0286	Warm Load Center		25 ± 15	
0288	Warm Load 1		25 ± 15	
0290	Warm Load 2		25 ± 15	
0292	Warm Load 3		25 ± 15	
0294	Warm Load 4		25 ± 15	
0296	Warm Load 5		25 ± 15	
0298	Warm Load 6		25 ± 15	
0300	Temp Sensor V. Reference		**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** Count of 24,552 +1765, -1308.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 415774 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________ Oper. 0070

R. Hair 3/11/99
Test Systems Engineer Date

7A 200 3/12/99
Customer Representative (Flight Hardware Only) 3/12/99 Date
Quality Control Date

AMSU A2-18 A2.EXE FULL SCAN MODE 11-MAR-99 10:21:20 SCAN NUMBER 53

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES

NO		DATA	TEMP C	NO		DATA	TEMP C
1	SCAN MOTOR	16610	20.62	11	RF SHELF	16732	20.86
2	FEED HORN	17028	21.21	12	DET/PREAMP	17066	21.54
3	RF MUX	17133	21.47	13	WARM LOAD CNTR	21829	20.42
4	MIXER IF CH 1	17155	21.70	14	WARM LOAD 1	21944	20.55
5	MIXER IF CH 2	17241	21.97	15	WARM LOAD 2	21828	20.38
6	LO CHANNEL 1	16950	21.11	16	WARM LOAD 3	21715	20.62
7	LO CHANNEL 2	17455	22.12	17	WARM LOAD 4	21815	20.23
8	COMP MOTOR	16627	20.26	18	WARM LOAD 5	21891	20.40
9	SUBREFLECTOR	17095	21.61	19	WARM LOAD 6	22224	20.37
10	DC/DC CONVERTER	17386	22.05		THERMAL REFERENCE	24998	

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

SELECT_TOUCHSCREEN_BUTTON 2

TEST DATA SHEET 40
Radiometer Relative NEΔT Verification (Paragraph 3.2.4.4.1.2)

Channel	Channel 1	Channel 2
NEΔT (Average of 5 data)	.205	.186
NEΔT (specified)*	0.30 K	0.30 K
Pass/Fail**	P	P

* For reference only.
** Use first CPT or first LPT data along with specified value for pass fail criteria.

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 415774 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________ Oper. 0070

R. Hai 3/11/99
Test Systems Engineer Date

3/12/99
Customer Representative (Flight Hardware Only) Date

7A 200 3/12/99
Quality Control Date

A2 FUNCTIONAL TEST RESULTS
A2.EXE 11-MAR-99 10:54:58

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	293.84	16409.0	13709.0	0.079	0.205
2	293.84	16404.0	12945.0	0.062	0.185

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

TDS 40

A2 FUNCTIONAL TEST RESULTS
A2.EXE 11-MAR-99 10:56:02

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	293.84	16408.0	13706.0	0.079	0.194
2	293.84	16403.0	12944.0	0.062	0.184

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

A2 FUNCTIONAL TEST RESULTS

A2.EXE 11-MAR-99 10:56:58

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	293.85	16406.0	13706.0	0.079	0.210
2	293.85	16403.0	12942.0	0.062	0.189

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

A2.EXE A2 FUNCTIONAL TEST RESULTS
11-MAR-99 10:57:54

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	293.85	16406.0	13705.0	0.079	0.188
2	293.85	16402.0	12942.0	0.062	0.191

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

A2 FUNCTIONAL TEST RESULTS

A2.EXE 11-MAR-99 10:58:50

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
1	293.85	16405.0	13705.0	0.079	0.229
2	293.85	16402.0	12938.0	0.062	0.183

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT_TOUCHSCREEN_BUTTON 2

TEST DATA SHEET NO. 40A
Channel Identification Test (Paragraph 3.2.4.4.2)

Channel Number	Sweeper Frequency Setting (GHz)	Polarization (H/V)	Radiometric Data (Δ Counts)	Channel Verified (Yes/No)
1	23.8	V	>10,000	YES
2	31.4	V	>10,000	YES

METSAT/AMSU A2 System CPT P/N IS-1331200 Shop Order: 415774 S/N: 105
Circle Test: 1st CPT Final CPT Sub CPT ________ oper. 0070

R. Haifl 3/11/99
Test Systems Engineer Date

7A 200 3/12/99
Quality Control Date

3/12/99
Customer Representative (Flight Hardware Only) Date

```
AMSU  A2-18 A2.EXE    COLD CAL MODE       11-MAR-99  12:41:47  SCAN NUMBER     62
[ 5 ] DIGITAL A DATA  ELEMENT 0000
[ 6 ] DIGITAL B DATA  ELEMENT   00
[ 7 ] ANALOG DATA     ELEMENT   00
                               RADIOMETRIC DATA
                           BEAM POSITION 30
                               CH  DATA
                                1 16473
                                2 16433

[ 21 ] UP                  [ 22 ] DOWN
        POWER [ 4 ]  ON
                     SCREEN ONLY [ 2 ]  PRINT  [ 3 ] FULL      [ 1 ] RETURN
SELECT_TOUCHSCREEN_BUTTON 2
```

TDS 40 A

```
AMSU  A2-18 A2.EXE     COLD CAL MODE        11-MAR-99   12:47:04   SCAN NUMBER    102
[ 5 ] DIGITAL A DATA   ELEMENT 0000

[ 6 ] DIGITAL B DATA   ELEMENT   00

[ 7 ] ANALOG DATA      ELEMENT   00

                                RADIOMETRIC DATA

                            BEAM POSITION 30

                                CH  DATA
                                 1 32767
                                 2 16422


[ 21 ] UP                    [ 22 ] DOWN

          POWER [ 4 ]   ON
                        SCREEN ONLY [ 2 ]   PRINT   [ 3 ] FULL        [ 1 ] RETURN
 SELECT TOUCHSCREEN BUTTON 2
```

TEST DATA SHEET 42

Instrument Feedback Tests (Paragraphs 3.2.4.2.1.4, 3.2.4.2.2.8, 3.2.4.2.3.2, 3.2.4.2.4.2)

Test Setup Verified: R. Haig
Signature

3.2.4.2.1.4 +28V Main Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured mA Ripple	Pass/Fail
3.2.4.2.1.4.1	7	Load current ripple	See 3.2.4.2.1.4	Value: ___	N/A 3/12/99

3.2.4.2.2.8 +28V Pulse Load Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured	Pass/Fail
3.2.4.2.2.8.1	7	Load current ripple	See 3.2.4.2.2.8	Value: ___	N/A 3/12/99

3.2.4.2.3.2 +28V Analog Telemetry Bus Instr. Feedback Tests

Subpara	Step	Test Type	Required	Measured	Pass/Fail
3.2.4.2.3.2.1	7	Load current ripple	See 3.2.4.2.3.2	Value: .128ma	P

3.2.4.2.4.2 +10V Interface Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured	Pass/Fail
3.2.4.2.4.2.1	7	Load current ripple	See 3.2.4.2.4.2	Value: .87mA	P

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional comments or observations, etc.) to this data sheet.

METSAT/AMSU A2 System CPT P/N IS-1331200
Circle Test: 1[st] CPT Final CPT Sub CPT ________

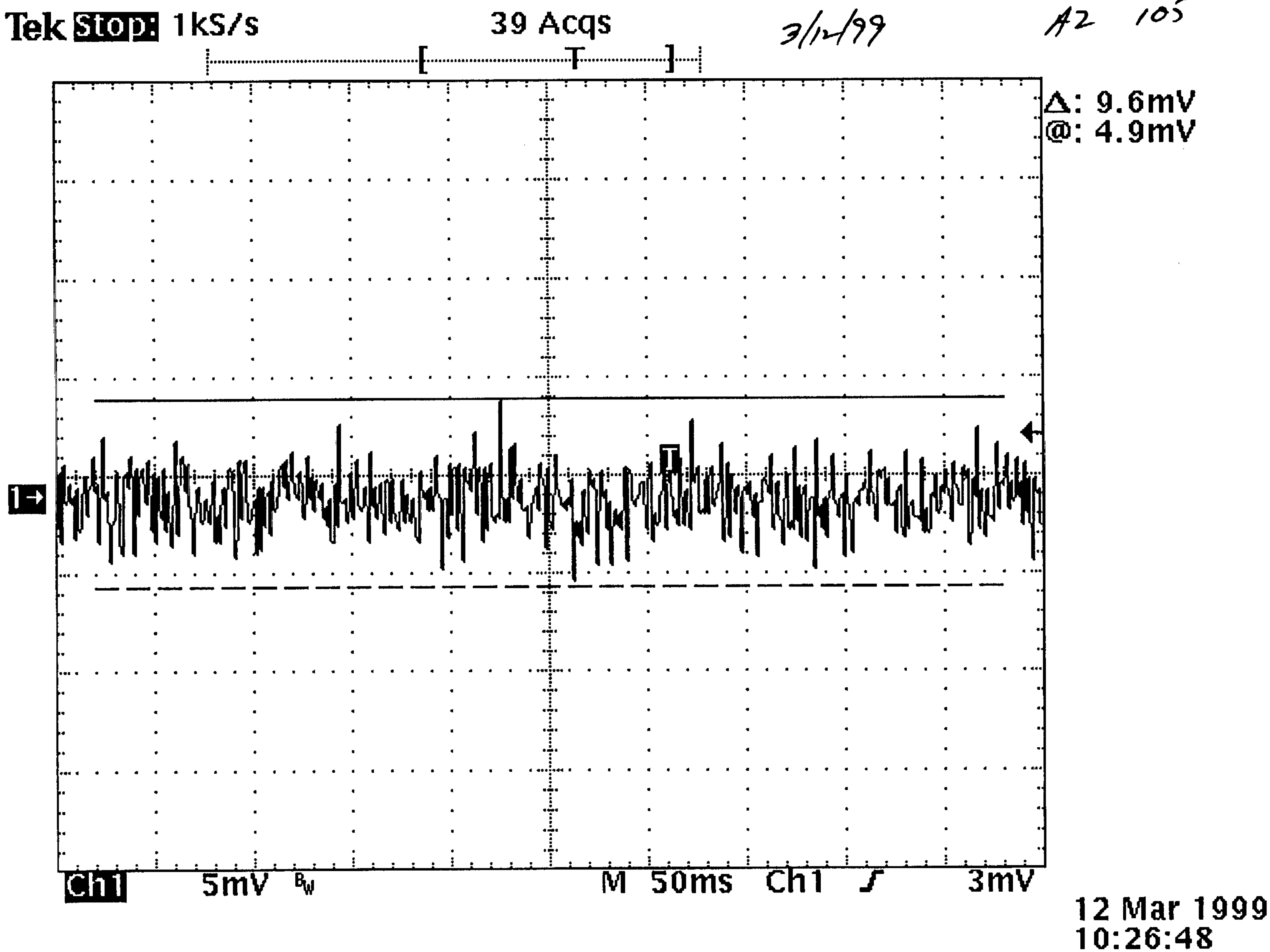
Shop Order: 415774 S/N: 105
oper. 0070

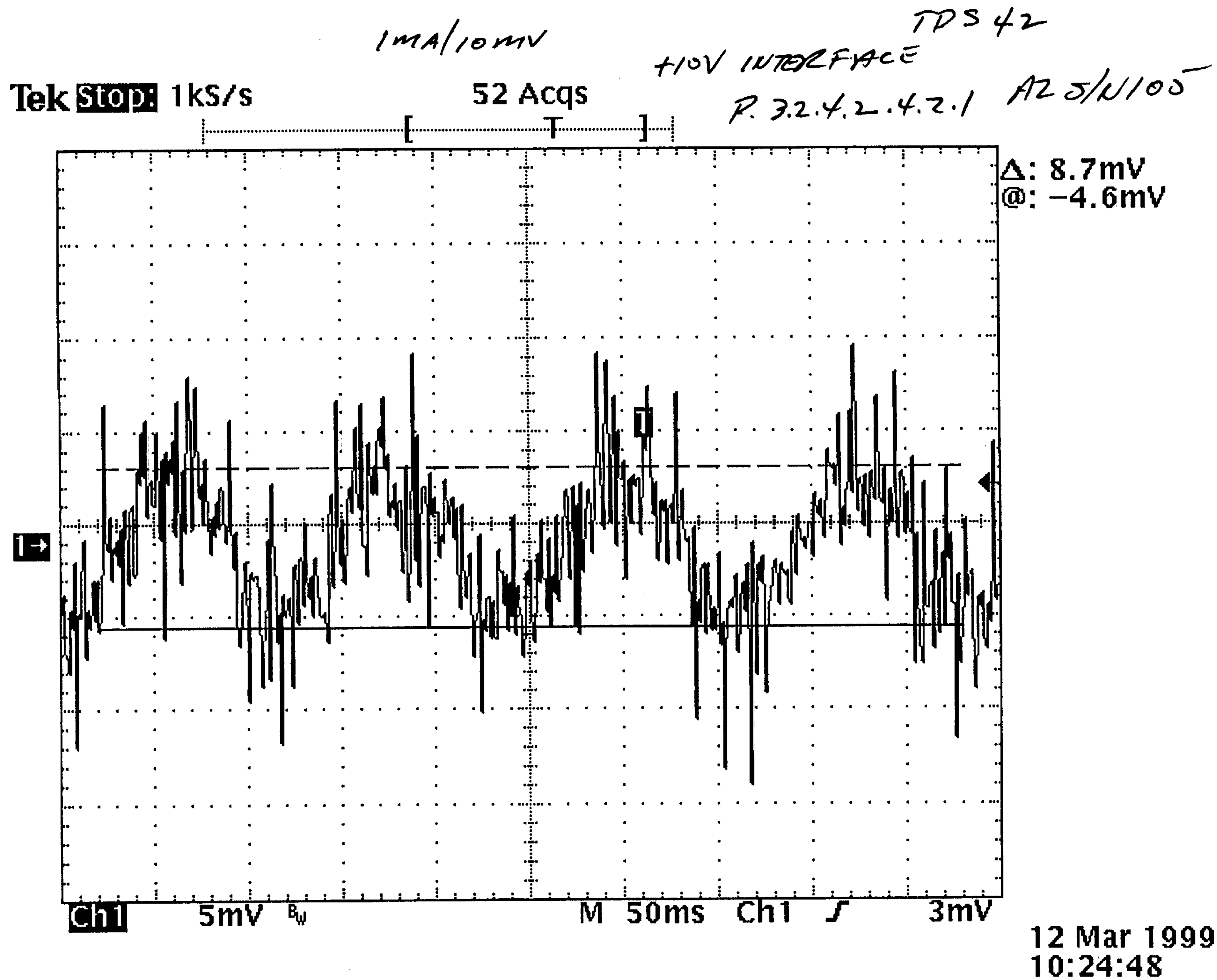
R. Haig 3/12/99
Test Systems Engineer Date

3/12/99
Quality Control Date

R. Snowe 3/13/99
Customer Representative (Flight Hardware Only) Date

PROBE BASELINE
3/12/99 A2 105

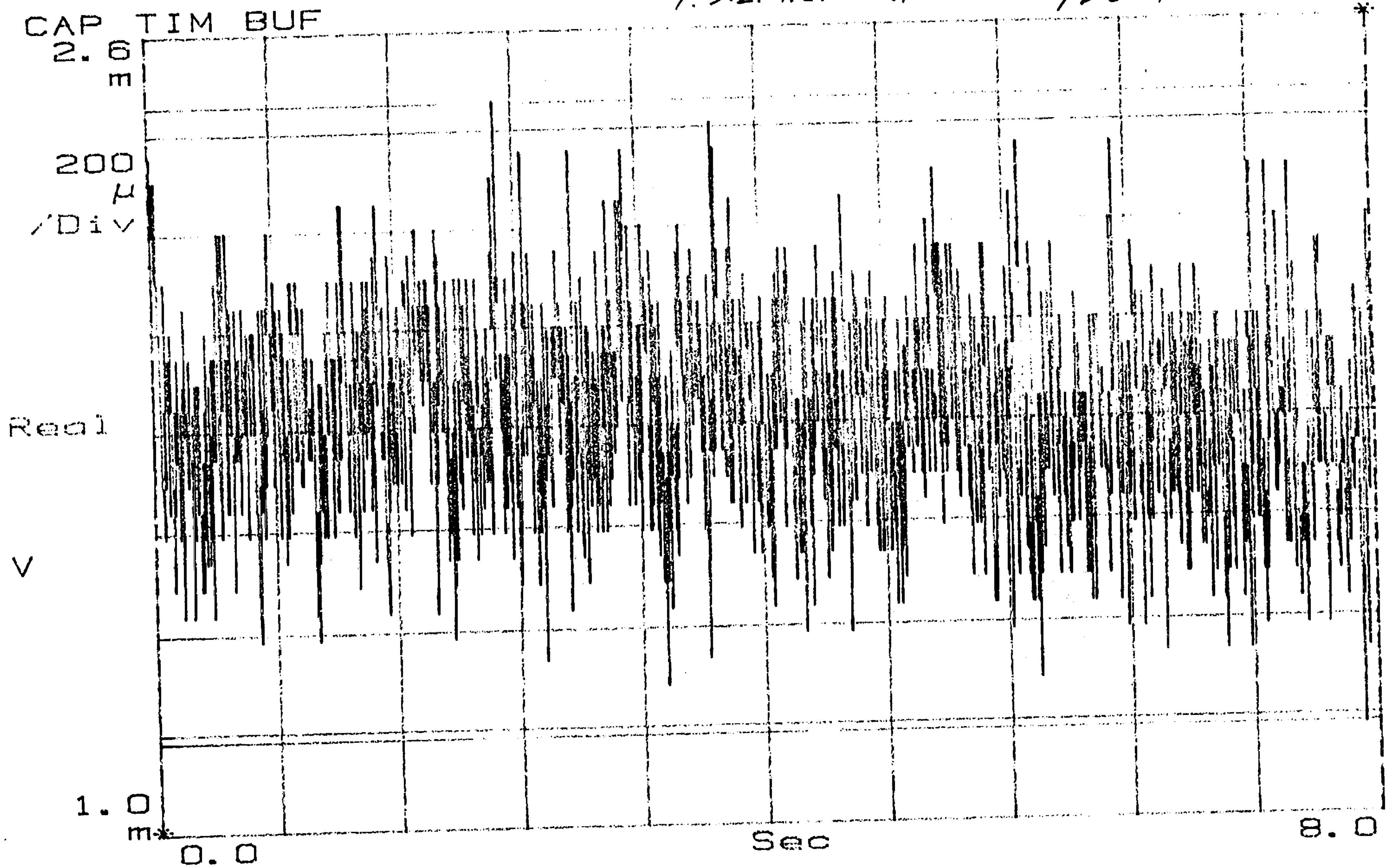



TDS 42
1mA/10mV
+10V INTERFACE
P. 3.2.4.2.4.2.1
A2 S/N 105
Tek Stop: 1kS/s
52 Acqs
Δ: 8.7mV
@: −4.6mV
1→
Ch1 5mV BW
M 50ms Ch1 ∫ 3mV
12 Mar 1999
10:24:48

1ma/10mV A2 105

Y=2. 45745m ΔY=1. 275mV

P.3.2.4.2.3.2.1 TDS 42



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1. AGENCY USE ONLY (*Leave blank*)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED

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6. AUTHOR(S) R. Platt	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Aerojet 1100 W. Hollyvale Azusa, CA 91702	8. PERFORMING ORGANIZATION REPORT NUMBER 11426 March 1999
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11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT	12b. DISTRIBUTION CODE
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13. ABSTRACT (*Maximum 200 words*)

This is the Performance Verification Report, Final Comprehensive Performance Test Report, P/N 1331200-2, S/N 105/A2, for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).

14. SUBJECT TERMS	15. NUMBER OF PAGES
EOS Microwave System	16. PRICE CODE ---

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	SAR

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Design Assurance (E. Lorenz) E Lorenz	8331	3/19/99
Quality Assurance (R. Taylor) [illegible] For	7831	3/19/99
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13. ABSTRACT *(Maximum 200 words)*

This is the Performance Verification Report, Final Comprehensive Performance Test Report, P/N 1331200-2, S/N 105/A2, for the Integrated Advanced Microwave Sounding Unit–A (AMSU-A).

14. SUBJECT TERMS
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15. NUMBER OF PAGES
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16. PRICE CODE

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